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CLAIMS

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[Claim(s)]

[Claim 1] (1) It is water-insoluble nature and is alkali water-solution fusibility resin and (2). The compound which generates an acid by the exposure of an activity beam of light or a radiation, and (3) A with a molecular weight of 3000 or less to which it has the radical which may be decompose with an acid and the solubility in the inside of an alkali developer increases according to an operation of an acid low-molecular acidolysis nature lysis inhibition compound, and (4) Positive type photosensitivity coloring constituent characterize by contain a coloring agent.

[Claim 2] The positive type photosensitivity coloring constituent according to claim 1 characterized by containing an organic base nature compound.

[Claim 3] (1) The resin and (2) which have the radical which an operation of an acid decomposes [ radical ] and increases the solubility in the inside of an alkali developer The compound which generates an acid by the exposure of an activity beam of light or a radiation, and (3) An organic base nature compound and (4) Positive type photosensitivity coloring constituent characterized by containing a coloring agent.

[Claim 4] The positive type photosensitivity coloring constituent according to claim 3 characterized by containing a with a molecular weight of 3000 or less to which it has the radical which may be decomposed with an acid and the solubility in the inside of an alkali developer increases according to an operation of an acid low-molecular acidolysis nature lysis inhibition compound.

[Claim 5] Claim 3 which is water-insoluble nature and is characterized by containing alkali water-solution fusibility resin, and a positive type photosensitivity coloring constituent given in four.

[Claim 6] The positive type photosensitivity coloring constituent according to claim 1 to 5 characterized by a coloring agent being an organic pigment.

[Claim 7] The positive type photosensitivity coloring constituent according to claim 6 characterized by the average grain size of an organic pigment being 0.01 micrometers - 0.2 micrometers.

[Claim 8] The color filter which characterizes a positive type photosensitivity coloring constituent given in any 1 term of above-mentioned claims 1-7 spreading, exposure, and exposure afterbaking on a transparence substrate, and is characterized by developing negatives and coming to form an image pattern.

RG

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[Translation done.]

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the color filter obtained using the positive type photosensitivity coloring constituent and this using suitable chemistry magnification to produce the color filter used for the positive type photosensitivity coloring constituent containing a coloring agent, especially a liquid crystal display component and a solid state image sensor.

[0002]

[Description of the Prior Art] As an approach of producing the color filter used for a liquid crystal display component or a solid state image sensor, a staining technique, print processes, the electrodeposition process, and the pigment-content powder method are learned.

[0003] the coloring radiation-sensitive constituent with which the pigment-content powder method made various photosensitive constituents distribute a pigment especially -- using -- FOTORISO -- it is the approach of producing a color filter by law. Since the pigment is being used for this approach, while it is stable with light, heat, etc., in order to carry out patterning of it by the FOTORISO method, it is enough and is a suitable approach for production of a big screen and the color filter for highly minute color displays. [ of location precision ]

[0004] As a pigment-content powder method, generally the negative-mold photosensitivity constituent which uses a photopolymerization nature monomer and a photopolymerization initiator for alkali fusibility resin is proposed as indicated by JP,1-102469,A, JP,1-152499,A, JP,2-181704,A, JP,2-199403,A, JP,4-76062,A, JP,5-273411,A, JP,6-184482,A, and JP,7-140654,A. Since these used the radical polymerization, they were influenced of the polymerization inhibition by oxygen, and the light irradiated for exposure was covered by the pigment, advance of the polymerization of a system was inadequate, and they could not take sufficient development latitude, but the problem was in image repeatability.

[0005] Although the photosensitive constituent of a chemistry multiplier system is indicated by JP,9-61615,A, this is a negative-mold photosensitivity constituent which obtains an image by making alkali fusibility resin construct a bridge according to the acid catalyst generated from the photo-oxide generating agent. If a pigment is added to the negative-mold photosensitivity constituent of such a chemistry multiplier system, the solubility of a system will fall, it is known that the difference of the development nature of the exposure section and an unexposed part will become small, consequently development latitude becomes narrow, and development nature deteriorates. Moreover, a pattern profile tends to serve as an inverse tapered shape into which the substrate side ate, and is not desirable as a color filter.

[0006] On the other hand, although the positive type photosensitivity coloring constituent is indicated by JP,6-35182,A, JP,6-194826,A, JP,6-194827,A, JP,6-194835,A, and JP,6-230215,A, these have problems, such as coloring originating in these compounds, using novolak resin and quinone diazide.

[0007] Moreover, a pattern profile tends to grow into the so-called T-top at whom the front-face side protruded in the positive type photosensitivity constituent of a chemistry multiplier system. This is considered to happen, when the acid generated in the exposure section by the neglect time amount to after [ exposure ] development deactivates by the alkali from a perimeter near a photo conductor front face, makes a pattern profile an inverse tapered shape, and is not desirable to a color filter. The color filter using the positive type photopolymer constituent containing acidolysis nature resin, and a photo-oxide generating agent and a pigment is indicated by JP,9-197121,A. However, by this approach, the above-mentioned trouble is not fully solved and is not satisfied practical.

[0008]

[The technical problem which invention will solve and to carry out] It was made in order that this invention might improve many faults of the aforementioned conventional technique, and the 1st purpose is high sensitivity and is to improve the pattern profile of a positive type chemistry multiplier system, and offer the suitable photosensitive coloring constituent for color filters. The 2nd purpose has the large development repeatability of the latitude of the unnecessary development of the oxygen cutoff film in offering the photosensitive coloring constituent which can give a sharp image with little turbulence of the edge section good. The 3rd purpose has the dispersibility of a coloring agent in offering the good and suitable photosensitive coloring constituent for the penetrable outstanding color filters.

[0009]

[Means for Solving the Problem] Said purpose was attained by the following configuration.

(1) and (1) It is water-insoluble nature and is alkali water-solution fusibility resin and (2). The compound which generates an acid by the exposure of an activity beam of light or a radiation, and (3) A with a molecular weight of 3000 or less to which it has the radical which may be decompose with an acid and the solubility in the inside of an alkali developer increases according to an operation of an acid low-molecular acidolysis nature lysis inhibition compound, and (4) Positive type photosensitivity coloring constituent characterize by contain a coloring agent.

(2) The positive type photosensitivity coloring constituent of the above-mentioned (1) publication characterized by containing an organic base nature compound.

(3) and (1) The resin and (2) which have the radical which an operation of an acid decomposes [ radical ] and increases the solubility in the inside of an alkali developer The compound which generates an acid by the exposure of an activity beam of light or a radiation, and (3) An organic base nature compound and (4) Positive type photosensitivity coloring constituent characterized by containing a coloring agent.

(4) an acid -- decomposing -- obtaining -- a radical -- having -- alkali -- a developer -- inside -- solubility -- an acid -- an operation -- increasing -- molecular weight -- 3000 -- less than -- low-molecular -- acidolysis -- a sex -- lysis inhibition -- a compound -- containing -- things -- the description -- \*\* -- carrying out -- the above -- (-- three --) -- a publication -- a positive type -- photosensitivity -- coloring -- a constituent .

(5) The above (3) which is water-insoluble nature and is characterized by containing alkali water-solution fusibility resin, and a positive type photosensitivity coloring constituent given in (4).

(6) The positive type photosensitivity coloring constituent given [ above-mentioned ] in (1) - (5) characterized by a coloring agent being an organic pigment.

(7) The positive type photosensitivity coloring constituent of the above-mentioned (6) publication characterized by the average grain size of an organic pigment being 0.01 micrometers - 0.2 micrometers.

(8) The color filter which characterizes a positive type photosensitivity coloring constituent given in any 1 term of above-mentioned (1) - (7) spreading, exposure, and exposure afterbaking on a transparence substrate, and is characterized by developing negatives and coming to form an image pattern.

[0010]

[Embodiment of the Invention] Hereafter, this invention is explained to a detail.

(1) water -- as alkali fusibility resin insoluble and used for resin (alkali fusibility resin):this invention meltable in an alkali water solution For example, novolak resin, hydrogenation novolak resin, acetone-pyrogallol resin, o-polyhydroxy styrene, m-polyhydroxy styrene, p-polyhydroxy styrene, Hydrogenation polyhydroxy styrene, a halogen, or alkylation polyhydroxy styrene, A hydroxystyrene-N-permutation maleimide copolymer, o/p-, and a m/p-hydroxystyrene copolymer, the part to the hydroxyl group of polyhydroxy styrene -- O-alkylation object for example, 5-30-mol % O-methylation object and O-(1-methoxy) ethylation object -- O-(1-ethoxy) ethylation object, an O-2-tetrahydropyranyl ghost, O-acylation objects, such as O-(t-butoxycarbonyl) methylation object For example, (5 - 30-mol % o-acetylation object, O-(t-butoxy) carbonylation object), etc., Although a styrene maleic anhydride copolymer, a styrene-hydroxystyrene copolymer, an alpha-methyl-styrene-hydroxystyrene copolymer, carboxyl group content acrylic resin, and its derivative can be mentioned, it is not limited to these. desirable alkali fusibility resin -- a part of o-polyhydroxy styrene, m-polyhydroxy styrene, p-polyhydroxy styrene and these copolymer, alkylation polyhydroxy styrene, and polyhydroxy styrene -- they are O-alkylation or O-acylation object, a styrene-hydroxystyrene copolymer, an alpha-methyl-styrene-hydroxystyrene copolymer, and carboxyl group content (meta) acrylic resin.

[0011] Two or more kinds may use these alkali fusibility resin in this invention, mixing. The amount of the alkali fusibility resin used is 20 - 70 % of the weight preferably ten to 80% of the weight on the basis of the total solids of a

coloring constituent. If fewer than this, the solubility of the whole system will fall, or if membranous falls and is not desirable and there is than this, pigment concentration will decrease and image concentration will fall. [ more ]

[0012] (2) The compound which generates an acid by the exposure of an activity beam of light or a radiation (photo-oxide generating agent) : the photo-oxide generating agent used by this invention is a compound which generates an acid by the exposure of an activity beam of light or a radiation. As a photo-oxide generating agent used by this invention, the photoinitiator of optical cationic polymerization, a well-known light (400-200nm ultraviolet rays and far ultraviolet rays -- preferably especially) currently used for the photoinitiator of an optical radical polymerization, the optical decolorizing agent of coloring matter, optical alterant, or a micro resist The compounds which generate an acid by g line, h line, i line, KrF excimer laser light, ArF excimer laser light, the electron ray, the X-ray, the molecular beam, or the ion beam, and those mixture can be used choosing them suitably.

[0013] moreover, as a compound which generates an acid by the exposure of the activity beam of light or radiation used for other this inventions For example S.I.Schlesinger, Photogr.Sci.Eng., 18,387 (1974), T. Diazonium salt given in S.Bal etal, Polymer, 21,423 (1980), etc., U.S. Pat. No. 4,069,055, said 4,069,056 numbers, \*\* Re No. 27,992, 17 Ammonium salt given in Japanese Patent Application No. No. 140,140 [ three to ] etc., D.C.Necker etal, Macromolecules, 2468 (1984), C. S.Wenet al, Teh, Proc.Conf.Rad.Curing ASIA, p478 Tokyo, Oct (1988), Phosphonium salt given in U.S. Pat. No. 4,069,055, said 4,069,056 numbers, etc., J. V.Crivello etal, Macromolecules, 10 (6), 1307 (1977), Chem.&Eng.News, Nov.28, p31 (1988), The Europe patent No. 104,143, U.S. Pat. No. 339,049, 410,201, Iodonium salt given in JP,2-150,848,A, JP,2-296,514,A, etc., J. -- V.Crivello etal and Polymer J. -- 17 and 73 (1985) -- J. V.Crivello 43 etal.J.Org.Chem., 3055 (1978), W. 22 R.Watt etal, J.PolymerSci., Polymer Chem.Ed., 1789 (1984), J. V.Crivello etal, Polymer Bull., 14,279 (1985), J. V.Crivello etal, Macromolecules, 14 (5), 17 1141 (1981), J.V.Crivello etal, J.PolymerSci., Polymer Chem.Ed., 2877 (1979), The Europe patent No. 370,693, said No. 3,902,114 said 233,567 numbers, Said 297,443 numbers, said 297,442 numbers, U.S. Pat. No. 4,933,377, said -- No. 161,811 -- said -- No. 410,201 -- said -- No. 339,049 -- said -- No. 4,760,013 Said 4,734,444 numbers, said 2,833,827 numbers, the Germany patent No. 2,904,626, Sulfonium salt given in said 3,604,580 numbers, said 3,604,581 numbers, etc., J. V.Crivello etal, Macromolecules, 10 (6), A seleno NIUMU salt given in 1307 (1977), J.V.Crivello etal, J.PolymerSci., Polymer Chem.Ed., 17, 1047 (1979), etc., C. Onium salt, such as arsonium salt given in S.Wen etal, Teh, Proc.Conf.Rad.Curing ASIA, p478Tokyo, Oct (1988), etc., U.S. Pat. No. 3,905,815, JP,46-4605,B, JP,48-36281,A, JP,55-32070,A, JP,60-239736,A, JP,61-169835,A, JP,61-169837,A, JP,62-58241,A, JP,62-212401,A, An organic halogenated compound given in JP,63-70243,A, JP,63-298339,A, etc., KMeier et al, J.Rad.Curing, 13 (4), 19 26 (1986), T.P.Gill et al, Inorg.Chem., 3007 (1980), D. Astruc, Acc.Chem.Res., 19 (12), 377 (1896), An organic metal / organic halogenide given in JP,2-161445,A etc., S. Hayase etal, J.Polymer Sci., 25,753 (1987), E. 23 Reichmanis etal, J.Polymer Sci., Polymer Chem.Ed., 1 (1985), Q. Q.Zhu etal, J.Photochem., 36, 85, 39,317 (1987), B. Amit etal, Tetrahedron Lett., (24) 2205 (1973), D. H.R.Barton etal, J.Chem Soc., 3571 (1965), P. M.Collins etal, J.Chem.Soc., Perkin I, 1695 (1975), M. Rudinstein etal, Tetrahedron Lett., (17), 110 1445 (1975), J.W.Walker etalJ.Am.Chem.Soc., 7170 (1988), S. C.Busman etal, J.Imaging Technol., 11 (4), 21 191 (1985), H.M.Houlihan etal, Macromolecules, 2001 (1988), P. M.Collins etal, J.Chem.Soc., Chem.Comm., 532 (1972), S. 18 Hayase etal, Macromolecules, 1799 (1985), E. Reichmanis etal, J.Electrochem.Soc., Solid State Sci.Technol., 130 (6), F. 21 M.Houlihan etal, Macromolecules, 2001 (1988), Europe patent 0290th and No. 750 -- said -- No. 046 or 083 -- said -- No. 156 or 535 Said 271,851 numbers and said 0,388,343 numbers, U.S. Pat. No. 3,901,710, The photo-oxide generating agent which has 0-nitrobenzyl mold protective group of a publication in said 4,181,531 numbers, JP,60-198538,A, JP,53-133022,A, etc., M. TUNOOKA etal, Polymer Preprints Japan, 35 (8), G. Berner etal, J.Rad.Curing, 13 (4), W. J.Mijs etal, Coating Technol., 55 (697) and 45 (1983), Akzo, H.Adachi etal, Polymer Preprints, Japan, 37 (3), the Europe patent 0199th and No. 672 -- said -- No. 84515 -- said -- No. 199 or 672 -- said -- No. 044 or 115 -- said -- No. 0101 or 122 and U.S. Pat. No. 618,564 -- said -- No. 4,371,605 -- said -- the disulfon compound of a publication can be mentioned to a compound which photodissociates and generates a sulfonic acid, JP,61-166544,A, etc. which are represented by imino sulfonate given in No. 4,431,774, JP,64-18143,A, JP,2-245756,A, Japanese Patent Application No. No. 140109 [ three to ], etc.

[0014] moreover, the radical which generates an acid by such light or a compound -- the principal chain of a polymer -- or -- the compound introduced into the side chain -- for example M. E.Woodhouse 104 etal, J.Am.Chem.Soc., 5586 (1982), S. P.Pappas etal, J.Imaging Sci., 30 (5), 218 (1986), S.Kondoetal, Makromol.Chem., Rapid Commun., 9,625 (1988), Y. Yamadaetal, Makromol.Chem., 152,153,163 (1972), J. 17 V.Crivello etal, J.PolymerSci., Polymer Chem.Ed., 3845 (1979), U.S. Pat. No. 3,849,137, the 3914407th JP,63-26653,A of the Germany patent, JP,55-

164824,A, JP,62-69263,A, JP,63-146038,A The compound of a publication can be used for JP,63-163452,A, JP,62-153853,A, JP,63-146029,A, etc.

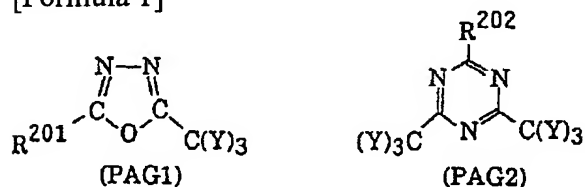
[0015] Furthermore, the compound which generates an acid by the light of a publication can also be used for V.N.R.Pillai, Synthesis, (1), 1 (1980), A.Abad etal, Tetrahedron Lett., (47) 4555 (1971), D.H.R.Barton etal, J.Chem.Soc., (C), 329 (1970), U.S. Pat. No. 3,779,778, the Europe patent No. 126,712, etc.

[0016] In the compound which decomposes by the exposure of the above-mentioned activity beam of light or a radiation, and generates an acid, especially the thing used effectively is explained below.

(1) S-triazine derivative expressed with the oxazole derivative or general formula (PAG2) expressed with the following general formula (PAG1) which the trihalomethyl group permuted.

[0017]

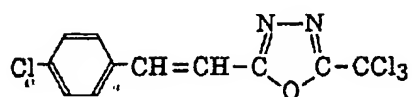
[Formula 1]



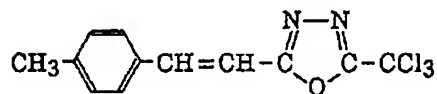
[0018] The inside of a formula, and R201 The aryl group which is not permuted [ a permutation or ], an alkenyl radical, and R202 The aryl group which is not permuted [ a permutation or ], an alkenyl radical, an alkyl group, and -C (Y)3 are shown. Y shows a chlorine atom or a bromine atom. Although the following compounds can specifically be mentioned, it is not limited to these.

[0019]

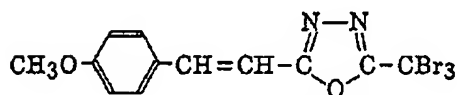
[Formula 2]



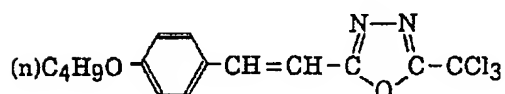
(PAG1-1)



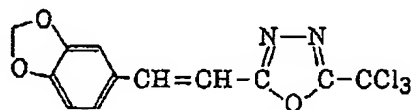
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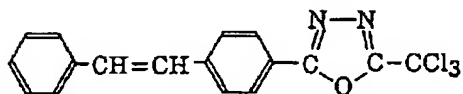
(PAG1-3)



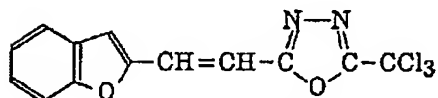
(PAG1-4)



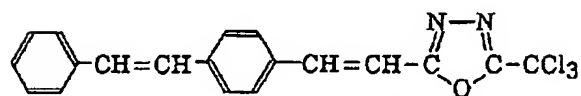
(PAG1-5)



(PAG1-6)



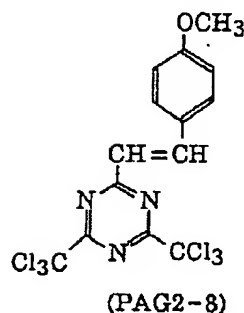
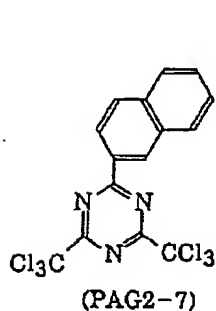
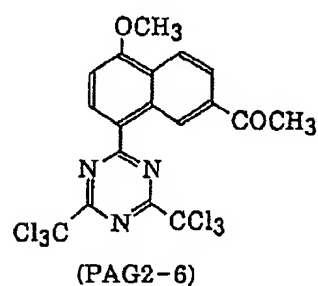
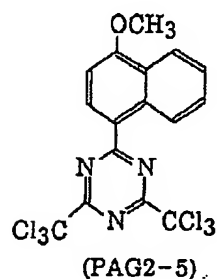
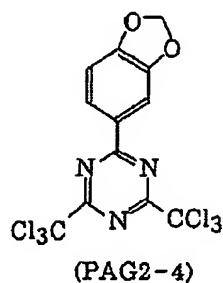
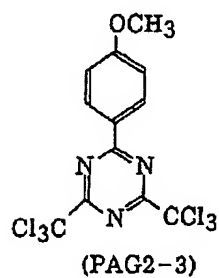
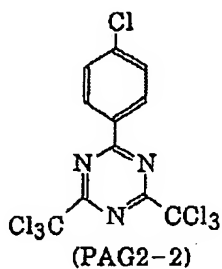
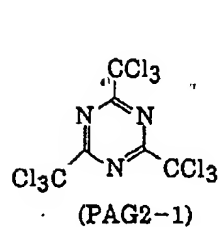
(PAG1-7)



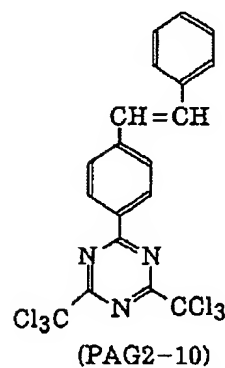
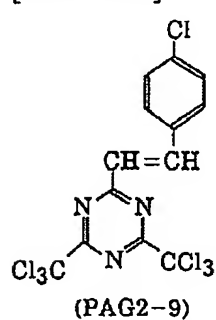
(PAG1-8)

[0020]

[Formula 3]



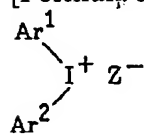
[0021]  
[Formula 4]



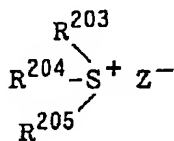
[0022] (2) Iodonium salt expressed with the following general formula (PAG3), or sulfonium salt expressed with a general formula (PAG4).

[0023]

[Formula 5]



(PAG3)



(PAG4)

[0024] The inside of a formula, and Ar1 and Ar2 The aryl group which is not permuted [ a permutation or ] is shown independently respectively. Here, as a desirable substituent, an alkyl group, a halo alkyl group, a cycloalkyl radical, an aryl group, an alkoxy group, a nitro group, a carboxyl group, an alkoxy carbonyl group, a HIRODOKISHI radical, a sulfhydryl group, and a halogen atom are mentioned.

[0025] R203, R204, and R205 The alkyl group which is not permuted [ a permutation or ] and an aryl group are shown independently respectively. Preferably, they are the aryl group of carbon numbers 6-14, the alkyl groups of carbon numbers 1-8, and those permutation derivatives. As a desirable substituent, it is the alkoxy group of carbon numbers 1-8, the alkyl group of carbon numbers 1-8, a nitro group, a carboxyl group, a HIRODOKISHI radical, and a halogen atom to an aryl group, and they are the alkoxy group of carbon numbers 1-8, a carboxyl group, and an ARUKOSHIKI carbonyl group to an alkyl group.

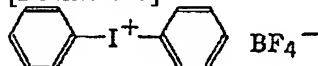
[0026] Z- shows an opposite anion, for example, is condensation polykaryotic aromatic series sulfonic-acid anions, such as perfluoro alkane sulfonic-acid anions, such as BF<sub>4</sub>-, AsF<sub>6</sub>-, PF<sub>6</sub>-, SbF<sub>6</sub>-, SiF<sub>6</sub>2-, ClO<sub>4</sub>-, and CF<sub>3</sub>SO<sub>3</sub>-, a pentafluoro benzenesulfonic acid anion, and a naphthalene-1-sulfonic-acid anion, and an anthraquinone sulfonic acid. Although an anion, a sulfonic group content color, etc. can be mentioned, it is not limited to these.

[0027] Moreover, R203, R204, and R205 Two, and Ar1 and Ar2 may be combined through each single bond or substituent.

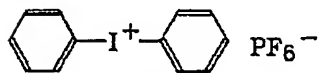
[0028] Although the compound shown below as an example is mentioned, it is not limited to these.

[0029]

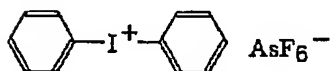
[Formula 6]



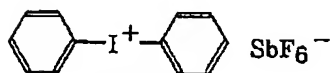
(PAG3-1)



(PAG3-2)



(PAG3-3)

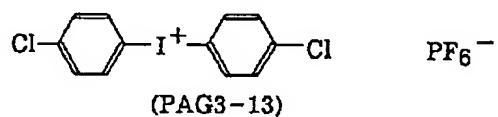
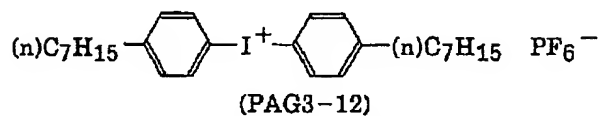
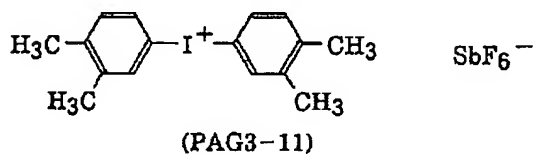
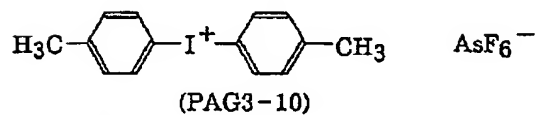
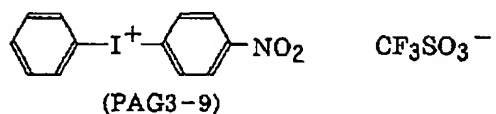
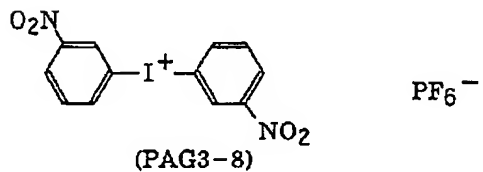
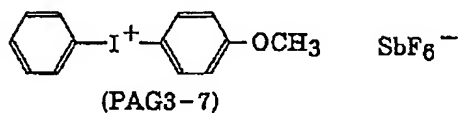
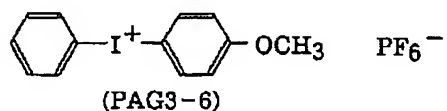
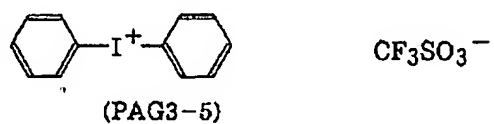


(PAG3-4)

[0030]

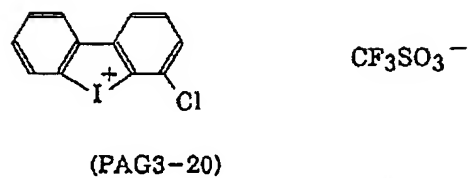
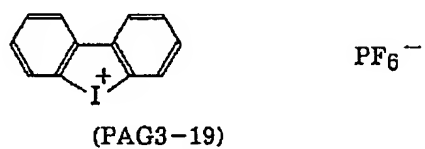
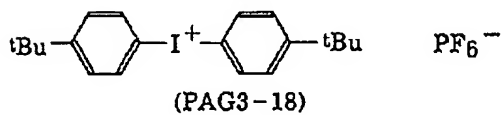
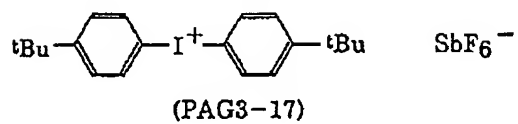
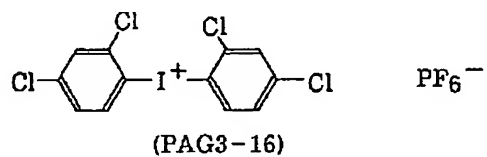
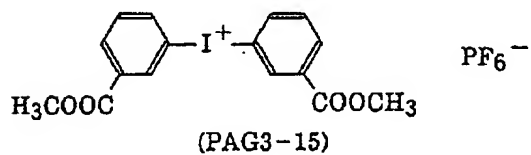
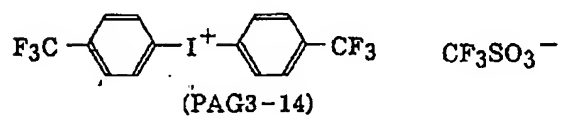
[Formula 7]



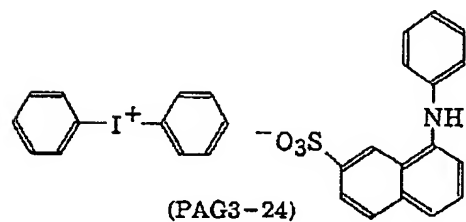
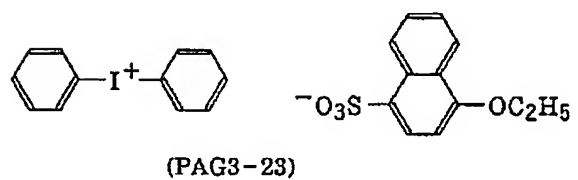
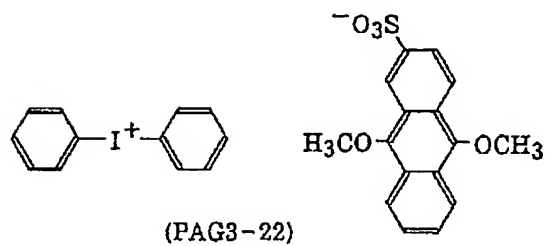
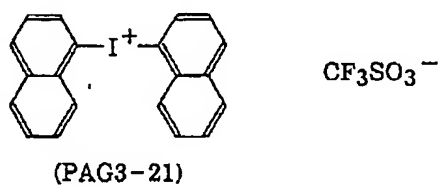


[0031]

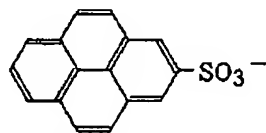
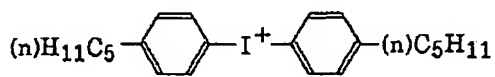
[Formula 8]



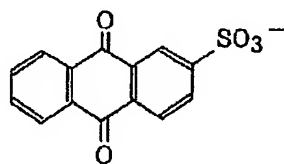
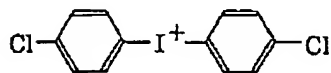
[0032]  
[Formula 9]



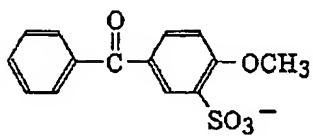
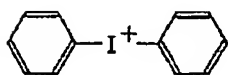
[0033]  
[Formula 10]



(PAG3-25)

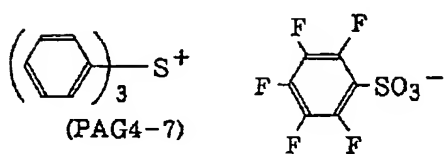
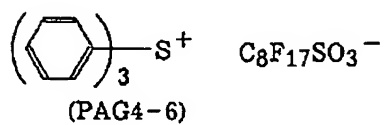
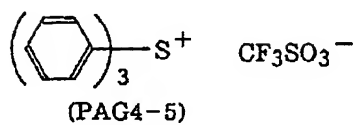
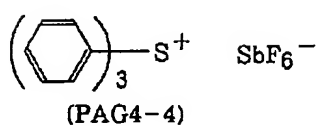
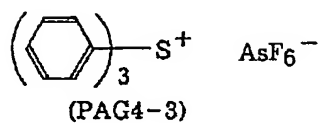
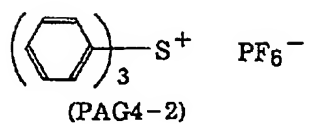
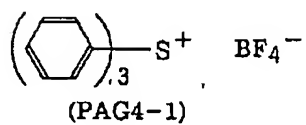


(PAG3-26)

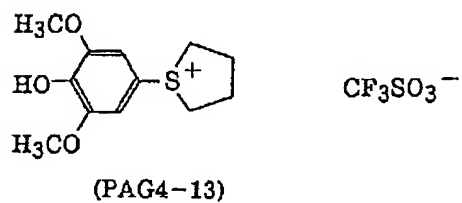
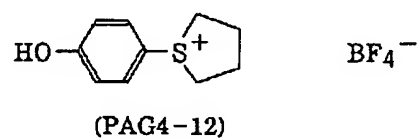
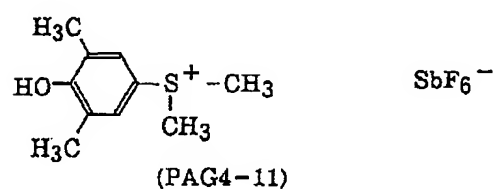
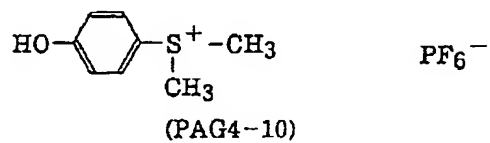
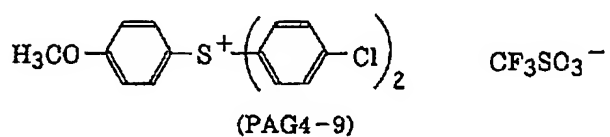
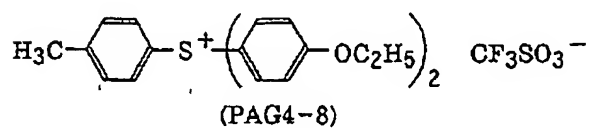


(PAG3-27)

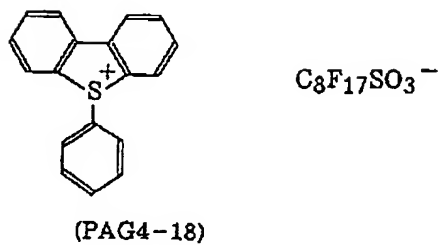
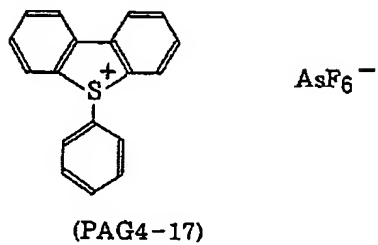
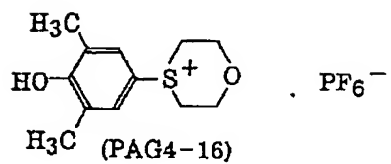
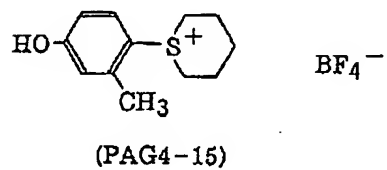
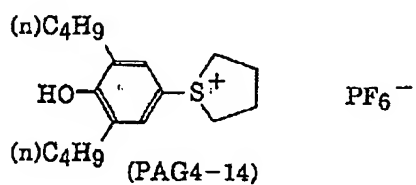
[0034]  
[Formula 11]



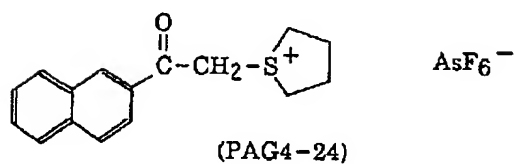
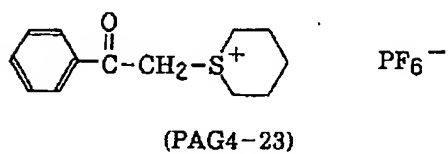
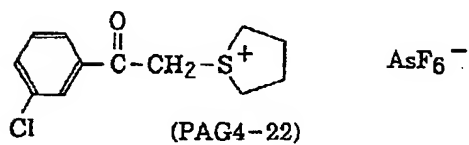
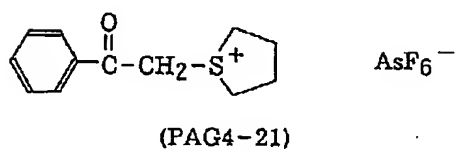
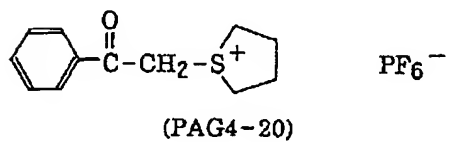
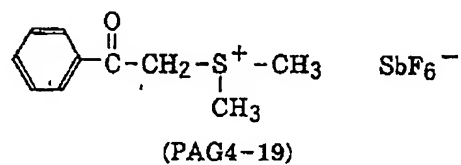
[0035]  
[Formula 12]



[0036]  
[Formula 13]

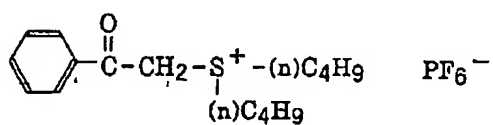


[0037]  
[Formula 14]

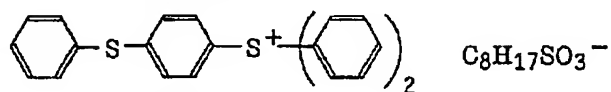


[0038]  
[Formula 15]

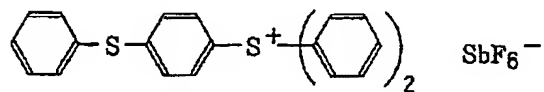




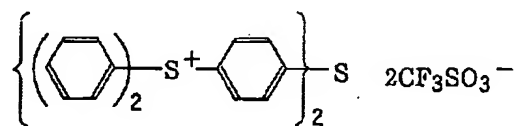
(PAG4-25)



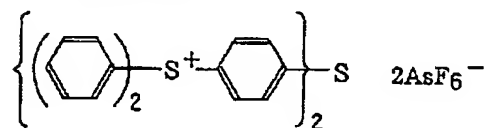
(PAG4-26)



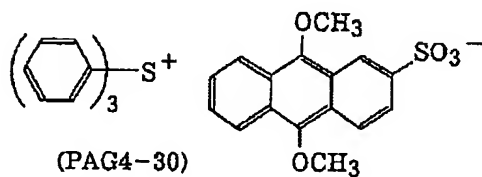
(PAG4-27)



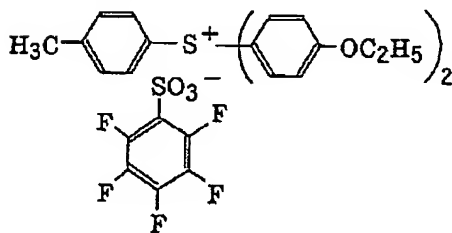
(PAG4-28)



(PAG4-29)



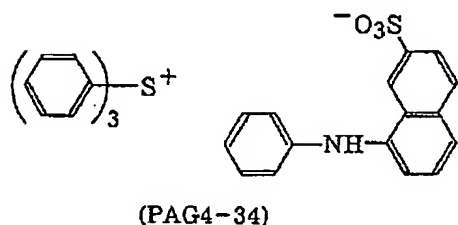
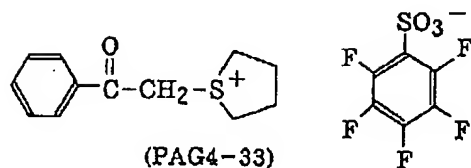
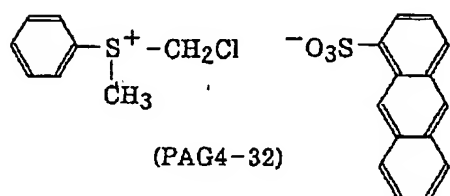
(PAG4-30)



(PAG4-31)

[0039]

[Formula 16]

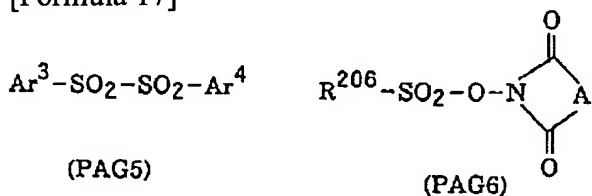


[0040] The above-mentioned onium salt shown by the general formula (PAG3) and (PAG4) is well-known. For example, J.W.Knapczyk et al, J.Am.Chem.Soc., 91,145 (1969), A. (L.Maycok et al, J.Org.Chem., 35 and 2532, 1970), E. Goethas et al, Bull.Soc.Chem.Belg., and 73 and 546 (1964), H. 51 M.Leicester, J.Ame.Chem.Soc., 3587 (1929), J. It is compoundable by the approach of a publication to V.Crivello et al, J.Polym.Chem.Ed., 18 and 2677 (1980), U.S. Pat. No. 2,807,648 and said 4,247,473 numbers, JP,53-101,331,A, etc.

[0041] (3) The imino sulfonate derivative expressed with the disulfon derivative or general formula (PAG6) expressed with the following general formula (PAG5).

[0042]

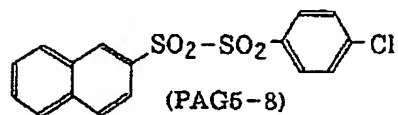
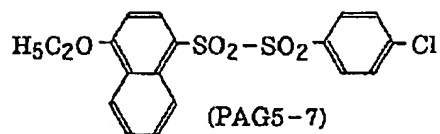
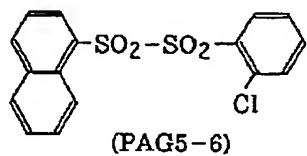
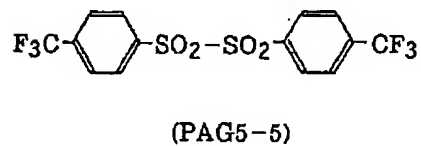
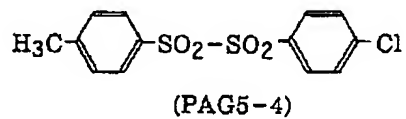
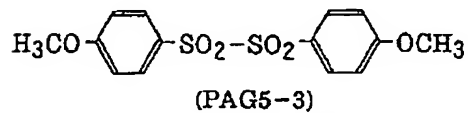
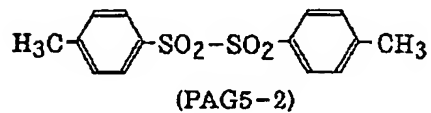
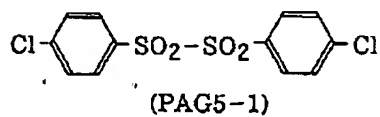
[Formula 17]



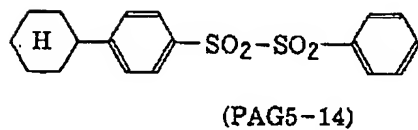
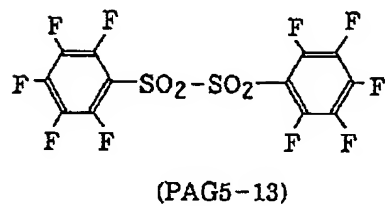
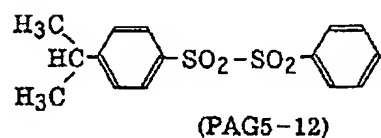
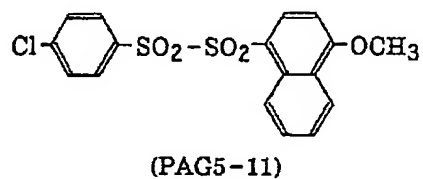
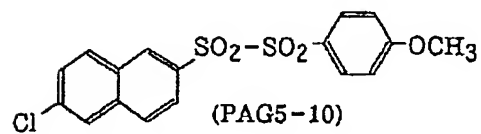
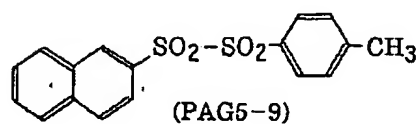
[0043] Ar3 and Ar4 show respectively the aryl group which is not permuted [ a permutation or ] independently among a formula. R206 The alkyl group which is not permuted [ a permutation or ] and an aryl group are shown. A shows the alkylene group which is not permuted [ a permutation or ], an alkenylene group, and an arylene radical. Although the compound shown below as an example is mentioned, it is not limited to these.

[0044]

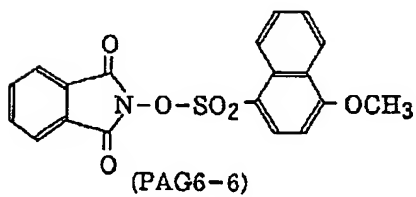
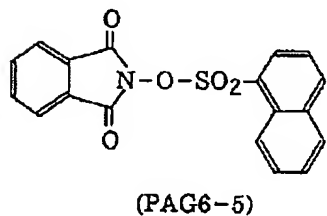
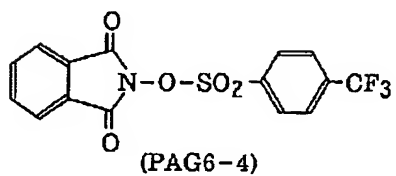
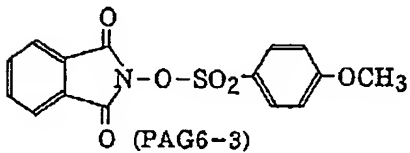
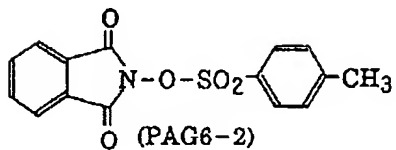
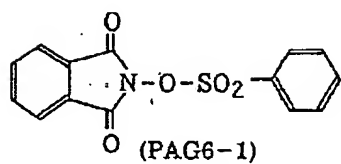
[Formula 18]



[0045]  
[Formula 19]

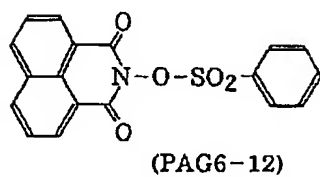
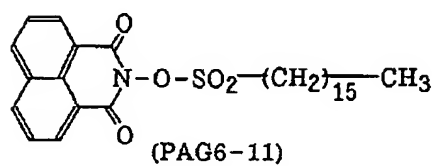
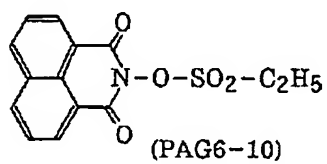
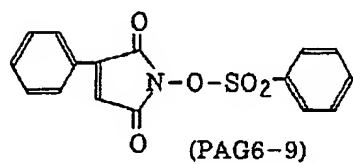
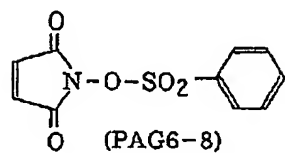
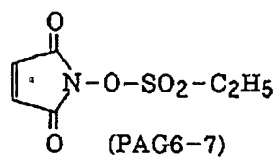


[0046]  
[Formula 20]

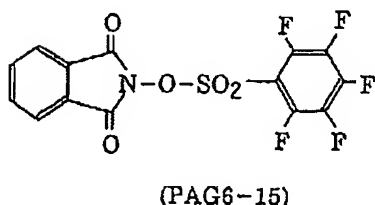
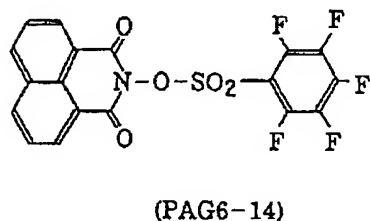
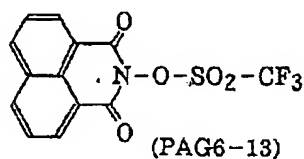


[0047]

[Formula 21]



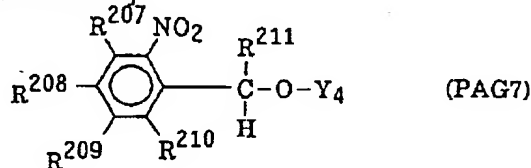
[0048]  
[Formula 22]



[0049] (4) o-nitrobenzyl mold photo-oxide generating agent expressed with the following general formula (PAG7).

[0050]

[Formula 23]



$R^{207} \sim R^{210}$  : それぞれ同一でも異なってもよく、水素原子、炭素数1~6のアルキル基、炭素数5~14のアリール基、炭素数6~20のアラルキル基、炭素数3~6のシクロアルキル基、炭素数1~6のパーフロロアルキル基、炭素数5~14のパーフロロアリール基、ニトロ基、シアノ基

$R^{211}$  : 水素原子、炭素数1~6のアルキル基、炭素数5~14のアリール基

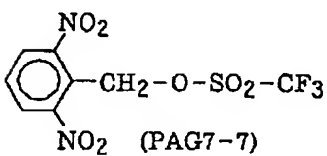
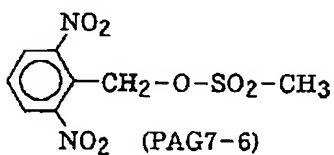
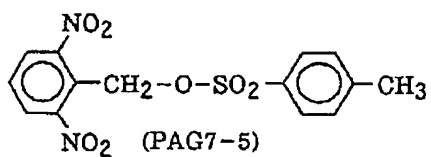
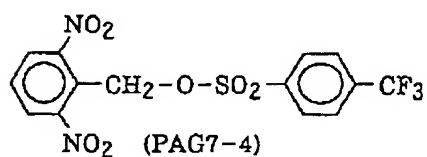
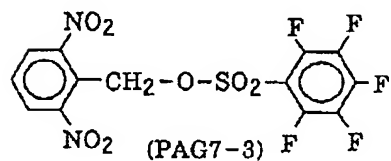
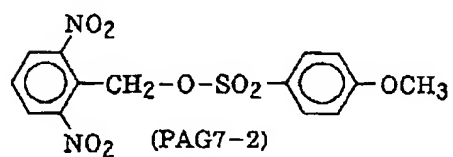
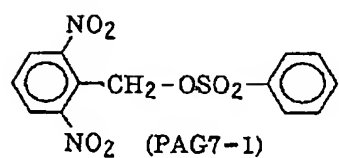
$Y_4$  :  $-\text{SO}_2-\text{R}^{212}$

$R^{212}$  : 炭素数1~6のアルキル基、炭素数5~14のアリール基、炭素数1~6のアルコキシ基を有する炭素数5~14のアリール基、炭素数6~20のアラルキル基、炭素数3~6のシクロアルキル基、炭素数1~6のパーフロロアルキル基、水素原子のかわりに炭素数1~6のパーフロロアルキル基、又はフッ素原子を置換基とする炭素数5~14のアリール基

である。

[0051] Although the compound shown below as an example is mentioned, it is not limited to these.

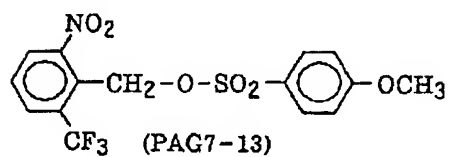
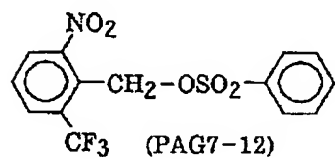
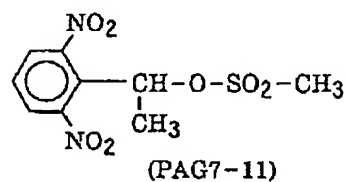
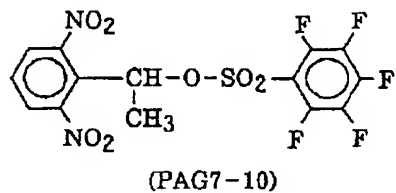
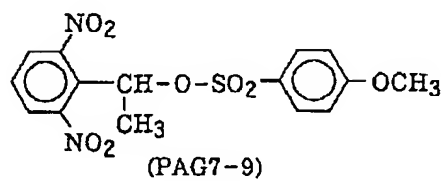
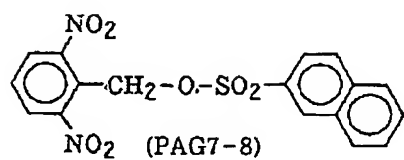
[Formula 24]



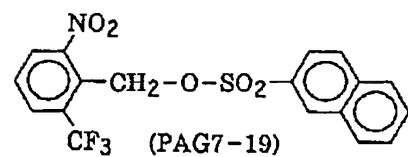
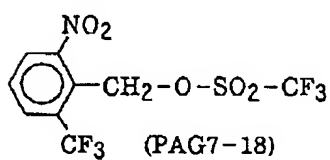
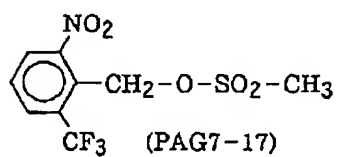
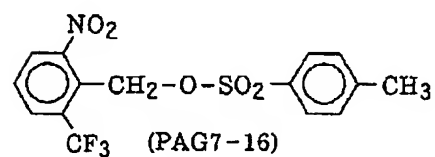
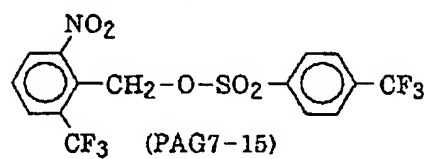
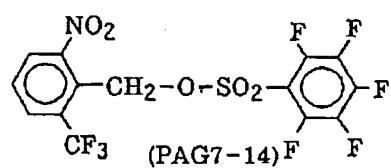
[0052]

[Formula 25]

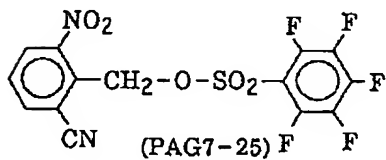
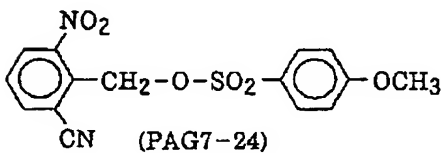
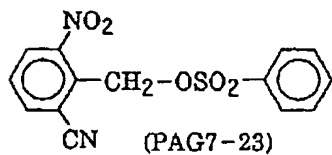
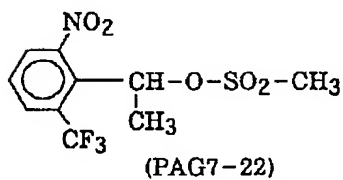
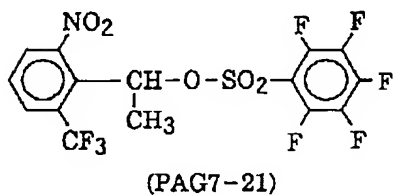
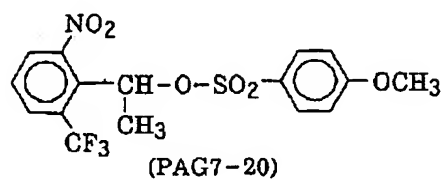




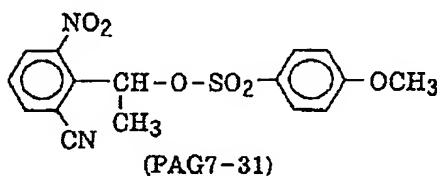
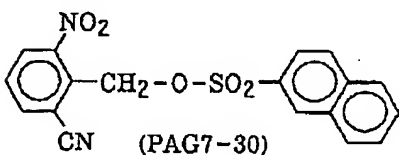
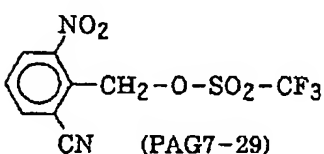
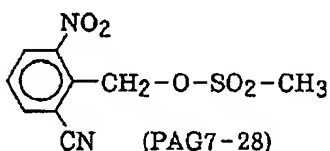
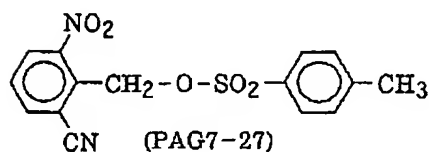
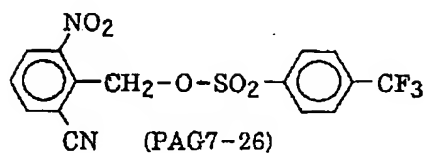
[0053]  
[Formula 26]



[0054]  
[Formula 27]

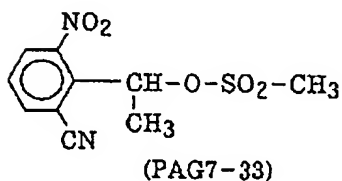
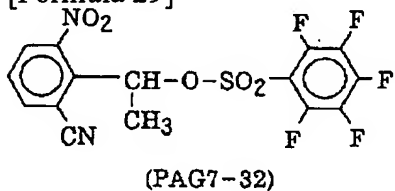


[0055]  
[Formula 28]



[0056]

[Formula 29]



[0057] As for the compound which generates an acid by the exposure of an activity beam of light or a radiation, in this invention, it is desirable onium salt, disulfon, and that the 4th place is a DNQ sulfonate, a triazine compound, and o-nitrobenzyl mold photo-oxide generating agent.

[0058] The addition of the compound which decomposes by the exposure of these activity beams of light or a radiation, and generates an acid is usually used in 0.01 - 40% of the weight of the range on the basis of all the solid content

weight (except for a spreading solvent) of a photosensitive constituent, and is preferably used in 0.1 - 20% of the weight of the range. It deteriorates [ if there are few additions of the compound which decomposes by the exposure of an activity beam of light or a radiation, and generates an acid than 0.01 % of the weight, resolution will fall, and if there are more additions than 40 % of the weight, membranous will fall, or / thermal resistance ] and is not desirable.

[0059] A with a molecular weight of 3000 or less to which it has the radical which may be decomposed with an acid and the solubility in the inside of an alkali developer increases according to an operation of an acid low-molecular acidolysis lysis inhibition compound (low-molecular lysis inhibition compound) : (3) The above-mentioned low-molecular lysis inhibition compound used for this invention The compound which has at least one sort of radicals chosen as an acidolysis nature machine from the (A) 3rd class alkyl ester group and the 3rd class alkyl carbonate radical, Or the compound which has at least one sort of radicals chosen from (B) acetal radical and a silyl ether group is desirable, and it is desirable to be chosen from these compounds in this invention. In the location which the acidolysis nature machine existed in [ at least two ] the structure among each compound, respectively, and the distance between these acidolysis nature machines left most In the location from which it has at least ten pieces, the compound via which it goes at least 12 pieces still more preferably, or at least three acidolysis nature machines, and the distance between these acidolysis nature machines separated preferably at least 11 joint atoms except an acidolysis nature machine most It is advantageous to use at least nine pieces and the compound via which it goes at least 11 pieces still more preferably at least ten pieces preferably for the joint atom except an acidolysis nature machine.

[0060] Deprotection of the acidolysis nature machine is carried out with the acid which will be generated if a low-molecular lysis inhibition compound controls the solubility to the alkali of alkali fusibility resin and receives exposure, and it has the operation which promotes the solubility to the alkali of resin conversely. Although the dissolution control compound which uses naphthalene, a biphenyl, and diphenyl cycloalkane as a frame compound at JP,63-27829,A and JP,3-198059,A is indicated, the lysis inhibition nature to alkali fusibility resin is small, and inadequate in respect of a profile and resolution.

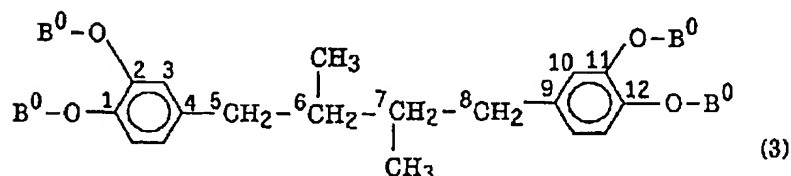
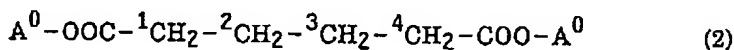
[0061] In this invention, a desirable low-molecular lysis inhibition compound is a compound protected with the acidolysis nature machine of the above of this alkali fusibility radical of a with a molecular weight of 3000 or less which has three or more alkali fusibility radicals in 1 molecule single structure compound 80% or more.

[0062] Moreover, in this invention, the number of 50 desirable upper limits of the above-mentioned joint atom is 30 still more preferably. In this invention, when a low-molecular lysis inhibition compound has preferably three or more acidolysis nature machines [ four or more ], and when separated [ beyond a fixed distance that has this acidolysis nature machine mutually ] also in what has two acidolysis nature machines, the lysis inhibition nature to alkali fusibility resin improves remarkably.

[0063] In addition, the distance between the acidolysis nature machines in this invention is shown by the course joint atomic number except an acidolysis nature machine. For example, in the case of the following compounds (1) and (2), the distance between acidolysis nature machines is four joint atoms respectively, and is 12 joint atoms with a compound (3).

[0064]

[Formula 30]



酸分解性基:  $-\text{COO}-\text{A}^0$ 、 $-\text{O}-\text{B}^0$

[0065] Moreover, the low-molecular lysis inhibition compound of this invention is a compound which consists of frames which have one acidolysis nature machine on the one benzene ring preferably, although (A) and (B) may have two or more acidolysis nature machines on the one benzene ring. Furthermore, the molecular weight of the low-molecular lysis inhibition compound of this invention -- 3,000 or less -- it is -- desirable -- 500-3,000 -- it is 1,000-2,500 still more preferably. The molecular weight of the low-molecular lysis inhibition compound of this invention is desirable in respect of high resolution [ be / it / the above-mentioned range ].

[0066] The acidolysis nature machine in (A) is expressed with -COO-C (R01) (R02) (R03) and -O-CO-O-C (R01) (R02) (R03) radical in the desirable embodiment of this invention. Furthermore, it is the case where it has combined with the compound with the structure by which an acidolysis nature machine is preferably shown by -R0-COO-C (R01) (R02) (R03) or -Ar-O-CO-O-C (R01) (R02) (R03).

[0067] Moreover, the acidolysis nature machine in (B) is expressed with -O-C(R04) (R05)-O-R06 or -O-Si (R07) (R08) (R09) radical. Furthermore, it is the case where it has combined with the compound with the structure by which an acidolysis nature machine is preferably shown by -Ar-O-C(R04) (R05)-O-R06 or -Ar-O-Si (R07) (R08) (R09) radical. Even if R01, R02, and R03 are the same respectively, difference of them may be carried out, and they show an alkyl group, a cycloalkyl radical, an alkenyl radical, or an aryl group.

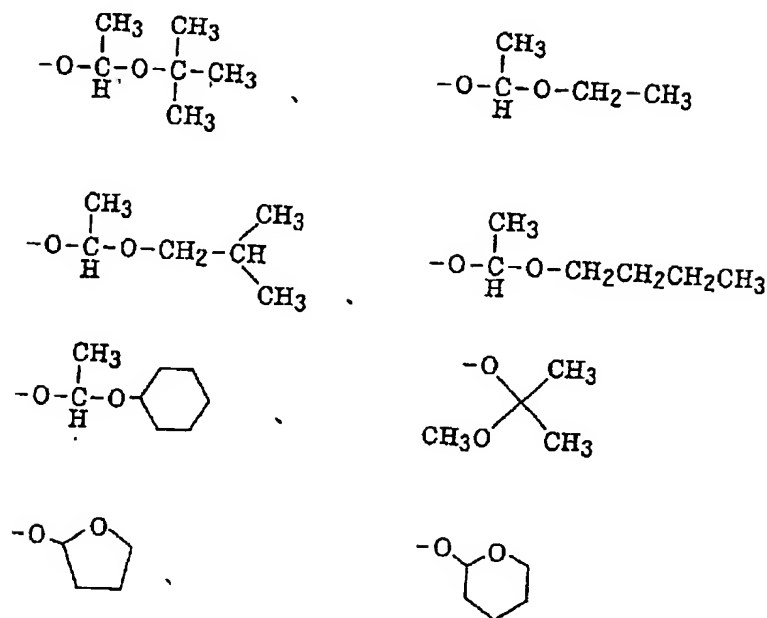
[0068] Even if R04, R05, R07, R08, and R09 are the same respectively, difference of them may be carried out, a hydrogen atom, an alkyl group, a cycloalkyl radical, an alkenyl radical, or an aryl group is shown, and R06 shows an alkyl group or an aryl group. However, at least two of R07-R09 are radicals other than a hydrogen atom, and two of R01-R03, R04-R05, and R07-R09 radicals may join together, and they may form the ring. R0 shows the aliphatic series or the aromatic hydrocarbon radical more than divalent [ which may have the substituent ], and -Ar- shows the aromatic series radical more than divalent [ which may have the substituent of a monocycle or many rings ].

[0069] As an alkyl group here A methyl group, an ethyl group, a propyl group, n-butyl, The thing of 1-4 carbon numbers like sec-butyl and t-butyl is desirable. As a cycloalkyl radical, a cyclo propyl group, cyclo butyl, a cyclohexyl radical, The thing of 3-10 carbon numbers like an adamantyl radical is desirable. As an alkenyl radical A vinyl group, The thing of 2-4 carbon numbers like a propenyl radical, an allyl group, and a butenyl group is desirable, and the thing of 6-14 carbon numbers like a phenyl group, a xylyl group, a toluyl radical, a KUMENIRU radical, a naphthyl group, and an anthracenyl group as an aryl group is desirable.

[0070] moreover -- as a substituent -- a hydroxyl group and a halogen atom (a fluorine, chlorine, and a bromine --) iodine, a nitro group, a cyano group, the above-mentioned alkyl group, and methoxy group, ethoxy radical, hydroxy ethoxy radical, propoxy group, hydroxy propoxy group, and n-butoxy radical - iso -- alkoxy groups, such as a butoxy radical, a sec-butoxy radical, and a t-butoxy radical, -- Alkoxy carbonyl groups, such as a methoxycarbonyl group and an ethoxycarbonyl radical, Aralkyl radicals, such as benzyl, a phenethyl radical, and a cumyl radical, an aralkyloxy radical, Acyl groups, such as a formyl group, and an acetyl group, a butyryl radical, benzoyl, a SHIANAMIRU radical, a valeryl radical, Alkenyloxy radicals, such as acyloxy radicals, such as a butyryloxy radical, the above-mentioned alkenyl radical, and a vinyloxy radical, a propenyloxy radical, an allyloxy radical, a butenyl oxy-radical, Aryloxy carbonyl groups, such as aryloxy groups, such as the above-mentioned aryl group and a phenoxy group, and a benzoyloxy radical, can be mentioned.

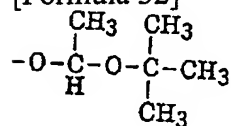
[0071] as the 3rd class alkyl group of the 3rd class alkyl ester group and the 3rd class alkyl carbonate radical -- concrete -- t-butyl, t-pentyl radical, and t-hexyl group -- t-butyl is raised especially preferably. Moreover, as an acetal radical, it is [0072].

[Formula 31]



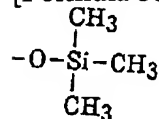
[0073] the radical come out of and shown -- especially -- desirable -- [0074]

[Formula 32]



[0075] It comes out and the radical shown is mentioned. Furthermore, as a silyl ether group, it is [0076].

[Formula 33]



[0077] It comes out and the radical shown is mentioned.

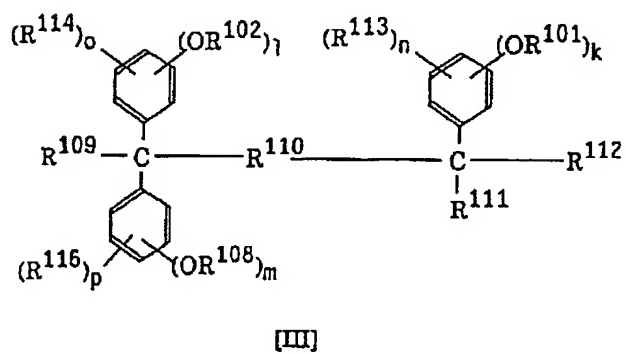
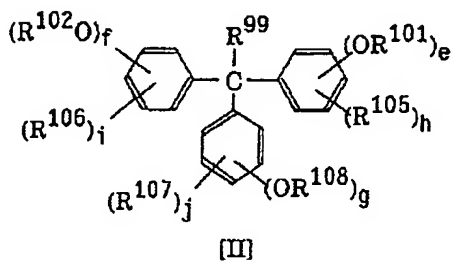
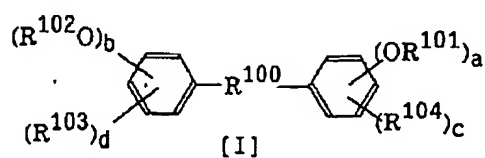
[0078] A desirable low-molecular lysis inhibition compound JP,1-289946,A, JP,1-289947,A, JP,2-2560,A, JP,3-128959,A, JP,3-158855,A, JP,3-179353,A, JP,3-191351,A, JP,3-200251,A, JP,3-200252,A, JP,3-200253,A, JP,3-200254,A, JP,3-200255,A, JP,3-259149,A, JP,3-279958,A, JP,3-279959,A, JP,4-1650,A, JP,4-1651,A, JP,4-11260,A, JP,4-12356,A, JP,4-12357,A, Japanese Patent Application No. No. 33229 [ three to ], Japanese Patent Application No. No. 230790 [ three to ], Japanese Patent Application No. No. 320438 [ three to ], Japanese Patent Application No. No. 25157 [ four to ], Japanese Patent Application No. No. 52732 [ four to ], Japanese Patent Application No. No. 103215 [ four to ], Japanese Patent Application No. No. 104542 [ four to ], Japanese Patent Application No. No. 107885 [ four to ], Japanese Patent Application No. No. 107889 [ four to ], The radical and -R0-COO-A0 which showed above a part or all of a phenol nature OH radical of a polyhydroxy compound that was indicated by specifications, such as 4-152195, Or B0 The compound which combined by the radical and was protected is contained.

[0079] Preferably Furthermore, JP,1-289946,A, JP,3-128959,A, JP,3-158855,A, JP,3-179353,A, JP,3-200251,A, JP,3-200252,A, JP,3-200255,A, JP,3-259149,A, JP,3-279958,A, JP,4-1650,A, JP,4-11260,A, JP,4-12356,A, JP,4-12357,A, Japanese Patent Application No. No. 25157 [ four to ], The thing using Japanese Patent Application No. No. 103215 [ four to ], Japanese Patent Application No. No. 104542 [ four to ], Japanese Patent Application No. No. 107885 [ four to ], Japanese Patent Application No. No. 107889 [ four to ], and the polyhydroxy compound indicated by the specification of 4-152195 is mentioned.

[0080] More specifically, the compound expressed with a general formula [I] - [XVI] is mentioned.

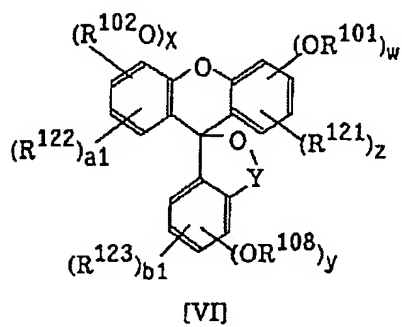
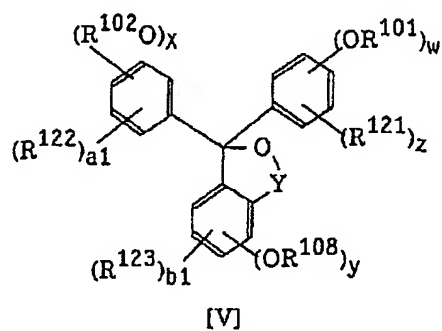
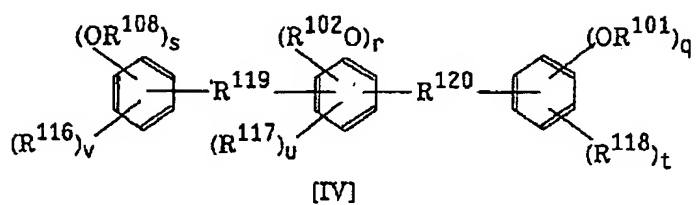
[0081]

[Formula 34]

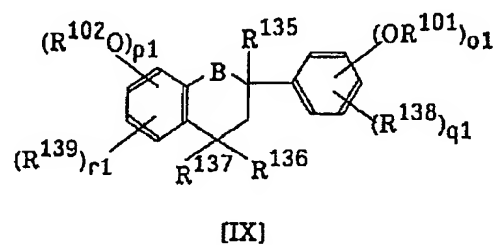
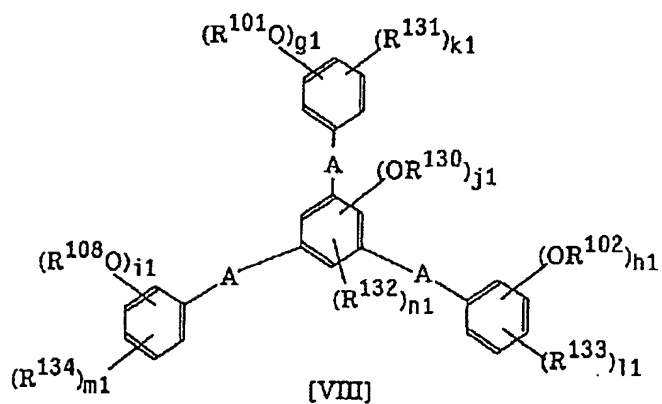
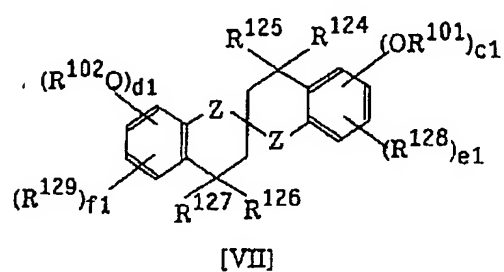


[0082]  
[Formula 35]

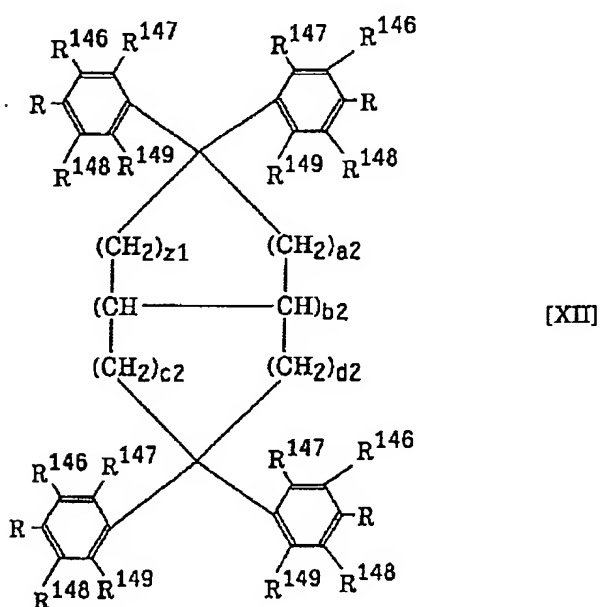
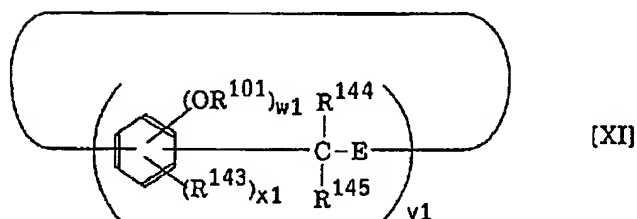
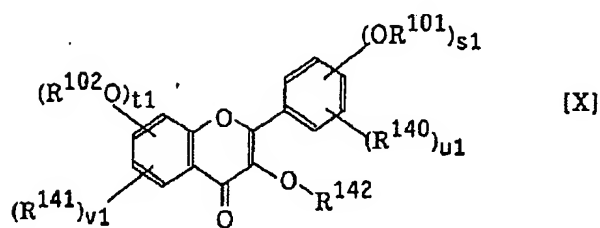




[0083]  
[Formula 36]



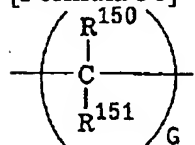
[0084]  
[Formula 37]



[0085] Here, it is R<sup>101</sup>, R<sup>102</sup>, R<sup>108</sup>, and R<sup>130</sup>. : You may differ, even if the same, and a hydrogen atom, -R<sup>0</sup>-COO-C (R<sup>01</sup>) (R<sup>02</sup>) (R<sup>03</sup>) or -CO-O-C (R<sup>01</sup>) (R<sup>02</sup>) (R<sup>03</sup>), however the definition of R<sup>0</sup>, R<sup>01</sup>, R<sup>02</sup>, and R<sup>03</sup> are the same as the above.

[0086] R<sup>100</sup> : -CO-, -COO-, -NHCONH-, -NHCOO-, -O-, -S-, -SO-, -SO<sub>2</sub>-, -SO<sub>3</sub>-, or [0087]

[Formula 38]

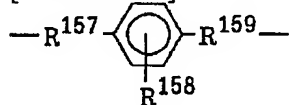


[0088] here -- G=2-6 however, the time of G= 2 -- R<sup>150</sup> and R<sup>151</sup> inside -- at least one side -- an alkyl group -- R<sup>150</sup>, R<sup>151</sup> : You may differ, even if the same. A hydrogen atom, an alkyl group, an alkoxy group, - OH, -COOH, -CN, a halogen atom, and -R<sup>152</sup>-COOR<sup>153</sup> Or -R<sup>154</sup>-OH, R<sup>152</sup>, R<sup>154</sup> : An alkylene group, R<sup>153</sup> : A hydrogen atom, an alkyl group, an aryl group, or an aralkyl radical, R<sup>99</sup>, R<sup>103</sup> -R<sup>107</sup>, R<sup>109</sup>, and R<sup>111</sup> -R<sup>118</sup>, R<sup>121</sup> -R<sup>123</sup>, R<sup>128</sup> -R<sup>129</sup>, and R<sup>131</sup> -R<sup>134</sup>, R<sup>138</sup> -R<sup>141</sup> And R<sup>143</sup> : It may be the same or you may differ. A hydrogen atom, a hydroxyl group, an alkyl group, an alkoxy group, an acyl group, an acyloxy radical, an aryl group, an aryloxy group, an aralkyl radical,

an aralkyloxy radical, a halogen atom, a nitro group, a carboxyl group, a cyano group, or -N (R155) (R156) (R155, R156:H, an alkyl group, or aryl group)

R110 : Single bond, an alkylene group, or [0089]

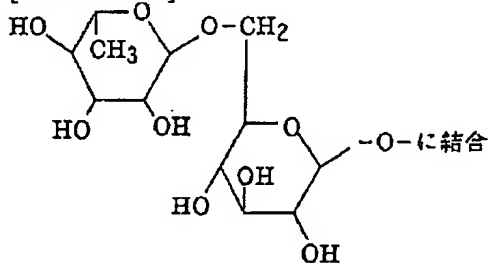
[Formula 39]



[0090] R157, R159 : It may be the same or you may differ. Single bond, an alkylene group, -O-, -S-, -CO-, or a carboxyl group, R158 : A hydrogen atom, an alkyl group, an alkoxy group, an acyl group, an acyloxy radical, an aryl group, a nitro group, a hydroxyl group, a cyano group, or a carboxyl group, However, a hydroxyl group may place and replace with an acidolysis nature machine (for example, a t-butoxy carbonylmethyl radical, a tetrahydropyranyl group, a 1-ethoxy-1-ethyl group, a 1-t-butoxy-1-ethyl group).

[0091] R119, R120 : It may be the same or you may differ. A methylene group, a low-grade alkylation methylene group, a halo methylene group, or a halo alkyl group, However, in this application, a low-grade alkyl group points out the alkyl group of carbon numbers 1-4. R124 -R127 : It may be the same or you may differ. A hydrogen atom or an alkyl group, R135 -R137 : It may be the same or you may differ. A hydrogen atom, an alkyl group, an alkoxy group, an acyl group, or an acyloxy radical, R142 : A hydrogen atom, -R0-COO-C (R01) (R02) (R03), -CO-O-C (R01) (R02) (R03), or [0092]

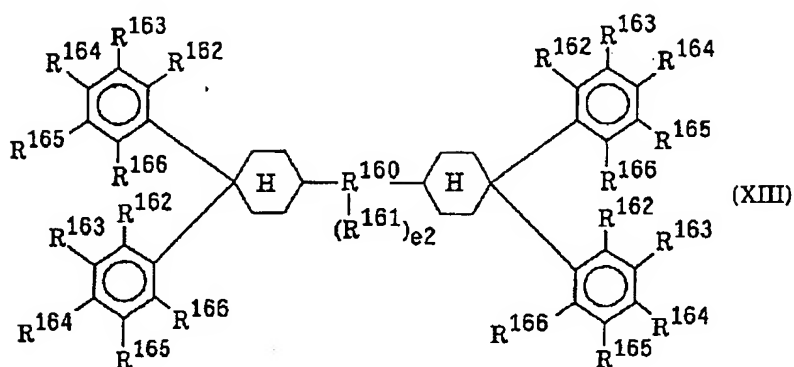
[Formula 40]



[0093] R144, R145 : It may be the same or you may differ. A hydrogen atom, low-grade alkyl group, and low-grade halo alkyl group or an aryl group, R146 -R149 : You may differ, even if the same. A hydrogen atom, a hydroxyl group, a halogen atom, a nitro group, a cyano group, a carbonyl group, an alkyl group, an alkoxy group, an alkoxy carbonyl group, an aralkyl radical, an aralkyloxy radical, an acyl group, an acyloxy radical, an alkenyl radical, an alkenyloxy radical, an aryl group, an aryloxy group, Or an aryloxy carbonyl group, however the substituent of the four same notations each may not be the same radicals. Y: -CO- or -SO<sub>2</sub>-, Z, B : Single bond or -O-, A : A methylene group, a low-grade alkylation methylene group, a halo methylene group, or a halo alkyl group, E : At single bond or an oxy-methylene group, a-z, the time of a1-y1:plurality That the radical in () is the same or a-q which may differ, s, t, v, g1-i1, k1-m1, o1, q1, s1 and u1:0, or the integer of 1-5, r, u, wx, y, z, a1-f1, p1, r1, t1, v1-x1:0, or the integer of 1-4, j1, n1, z1, a2, b2, c2, d2:0, or the integer of 1-3, At least one of z1, a2, c2, and d2 1 or more, the integer of y1:3-8, (a+b), (e+f+g), (k+l+m), (q+r+s), (w+x+y), (c1+d1) (g1+h1+i1+j1) (o1+p1) >=(s1+t1) 2, <=(j1+n1) 3, (r+u), (w+z), (x+a1), (y+b1), (c1+e1), (d1+f1), In the case of (p1+r1) (t1+v1) <=(x1+w1) 4, however a general formula [V], (w+z), (x+a1) <=5 and (a+c) (b+d) (e+h) (f+i) (g+j) (k+n) (l+o) (m+p) (q+t) (second+v) (g1+k1) (h1+l1) (i1+m1) (o1+q1) <=(s1+u1) 5 are expressed.

[0094]

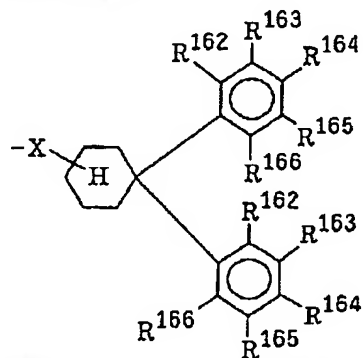
[Formula 41]



ここで、

$R^{160}$  : 有機基、単結合、 $-S-$ 、 $-SO-$ もしくは $-\overset{\text{O}}{\parallel}\text{S}-\overset{\text{O}}{\parallel}$

$R^{161}$  : 水素原子、一価の有機基もしくは



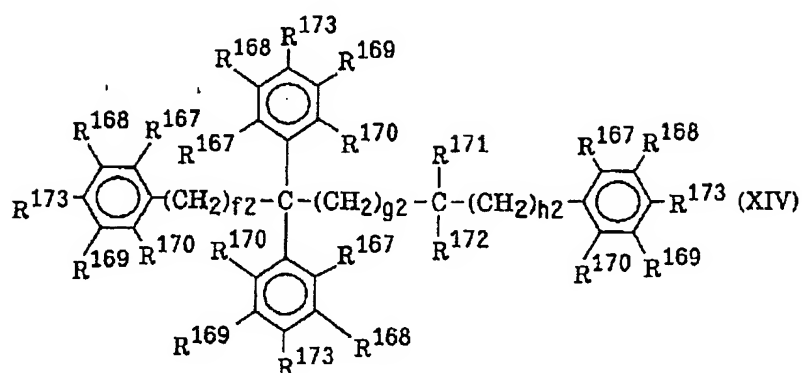
$R^{162} \sim R^{166}$  : 同一でも異なっても良く、水素原子、水酸基、ハロゲン原子、アルキル基、アルコキシ基、アルケニル基、 $-O-R^0-COO-C(R^{01})(R^{02})(R^{03})$ もしくは $-O-CO-O-C(R^{01})(R^{02})(R^{03})$ 、但し、少なくとも2つは $-O-R^0-COO-C(R^{01})(R^{02})(R^{03})$ もしくは $-O-CO-O-C(R^{01})(R^{02})(R^{03})$ である、又、各4もしくは6個の同一記号の置換基は同一の基でなくても良い、

X : 2価の有機基、

e2 : 0もしくは1、を表わす。

[0095]

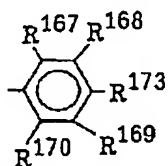
[Formula 42]



ここで、

$R^{167} \sim R^{170}$  : 同一でも異なっても良く、水素原子、水酸基、ハロゲン原子、アルキル基、アルコキシ基、もしくはアルケニル基、但し、各4~6個の同一記号の置換基は同一の基でなくても良い、

$R^{171}, R^{172}$  : 水素原子、アルキル基もしくは



$R^{173}$  : 少なくとも2つは  $-O-R^0-COO-C(R^{01})(R^{02})(R^{03})$  基もしくは  $-O-CO-O-C(R^{01})(R^{02})(R^{03})$  基であり、その他は水酸基である、

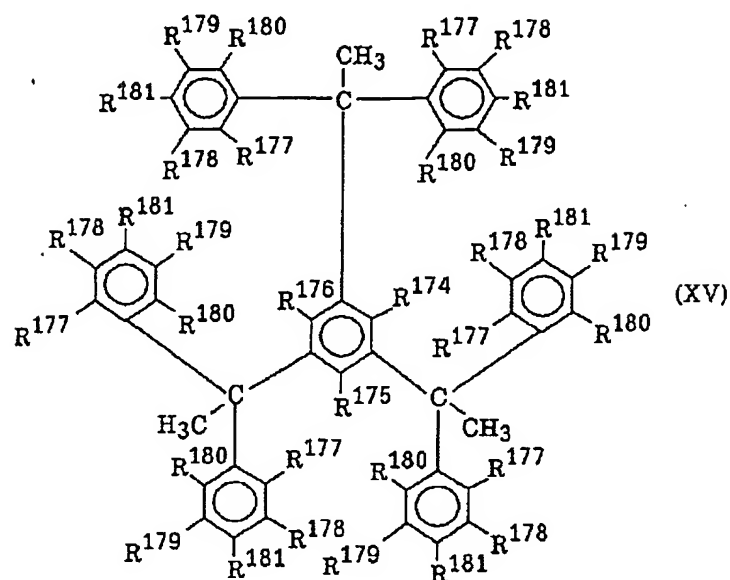
$f2, h2$  : 0もしくは1、

$g2$  : 0もしくは1~4の整数、

を表す。

[0096]

[Formula 43]



ここで、

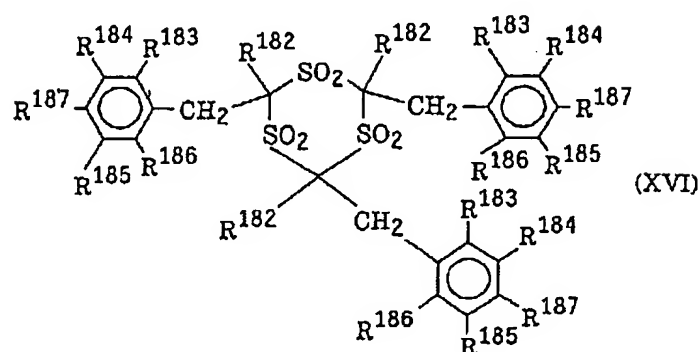
$R^{174} \sim R^{180}$ : 同一でも異なっても良く、水素原子、水酸基、ハロゲン原子、アルキル基、アルコキシ基、ニトロ基、アルケニル基、アリール基、アラルキル基、アルコキシカルボニル基、アリールカルボニル基、アシロキシ基、アシル基、アラルキルオキシ基もしくはアリールオキシ基、但し、各6個の同一記号の置換基は同一の基でなくても良い、

$R^{181}$ : 少なくとも2つは  $-O-R^0-COO-C(R^{01})(R^{02})(R^{03})$  基もしくは  $-O-CO-O-C(R^{01})(R^{02})(R^{03})$  基であり、その他は水酸基である、

を表す。

[0097]

[Formula 44]



ここで、

$R^{182}$  : 水素原子もしくはアルキル基、但し、全部同一でなくとも良い、

$R^{183} \sim R^{186}$  : 水酸基、水素原子、ハロゲン原子、アルキル基、もしくはアルコキシ基、但し、各3個の同一記号の置換基は同一の基でなくとも良い、

$R^{187}$  : 少なくとも2つは  $-O-R^0-COO-C(R^{01})(R^{02})(R^{03})$  基もしくは、 $-O-CO-O-C(R^{01})(R^{02})(R^{03})$  基であり、その他は水酸基である、

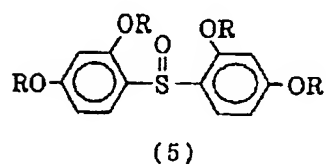
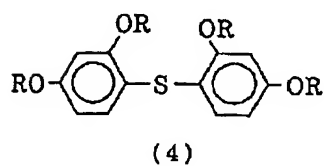
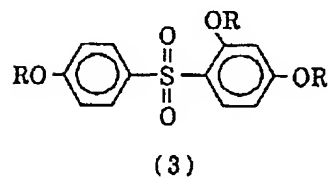
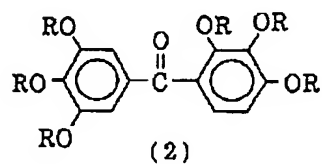
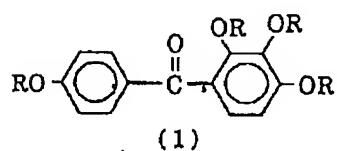
を表す。

[0098] The example of a desirable compound frame is shown below.

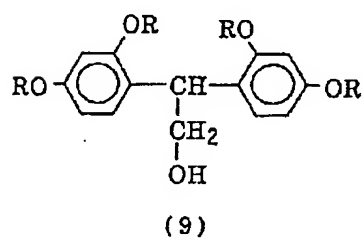
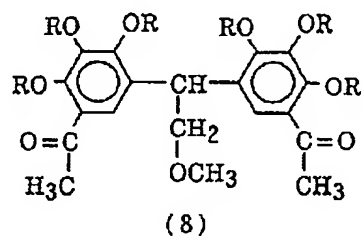
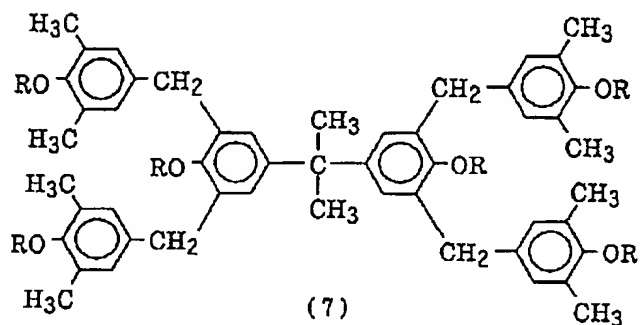
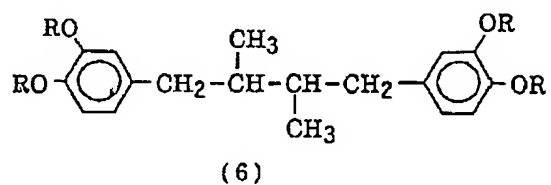
[0099]

[Formula 45]

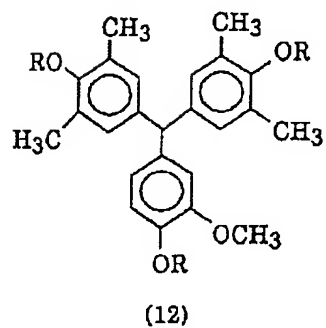
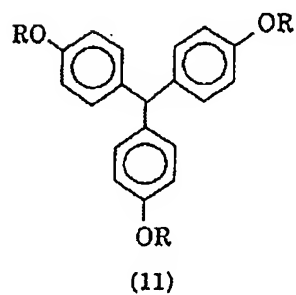
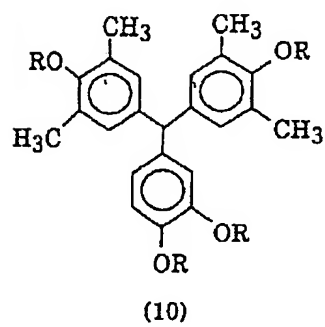




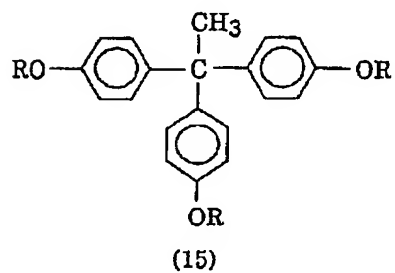
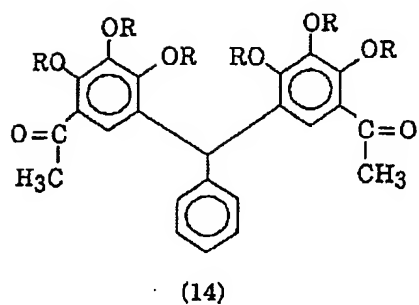
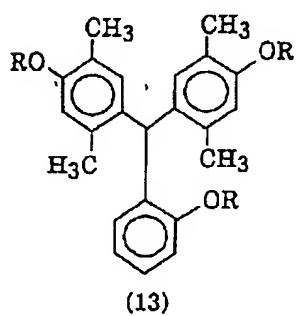
[0100]  
[Formula 46]



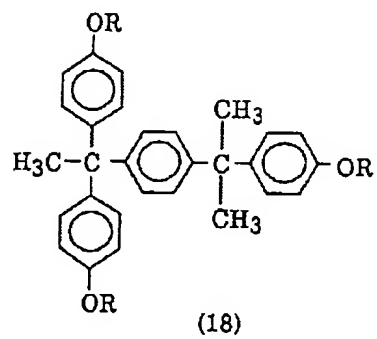
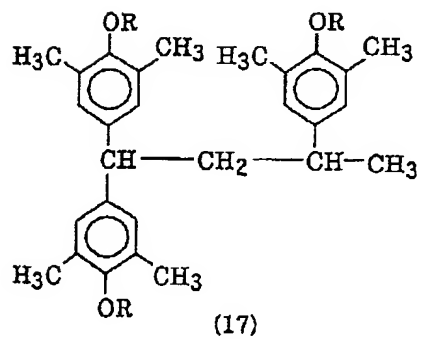
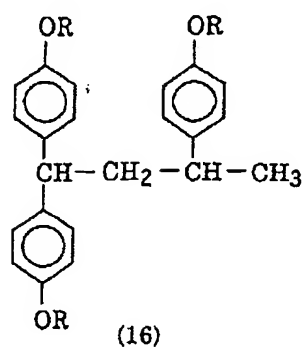
[0101]  
[Formula 47]



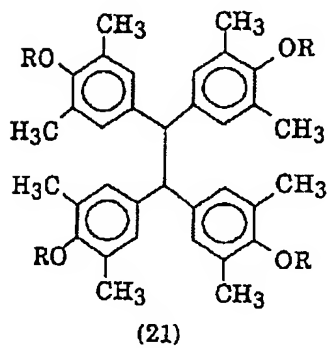
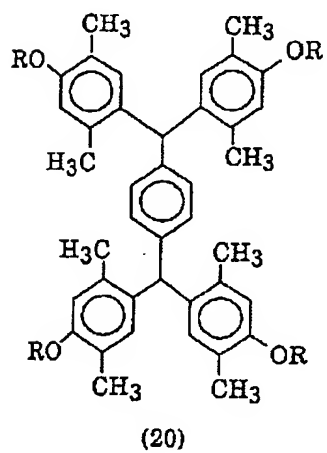
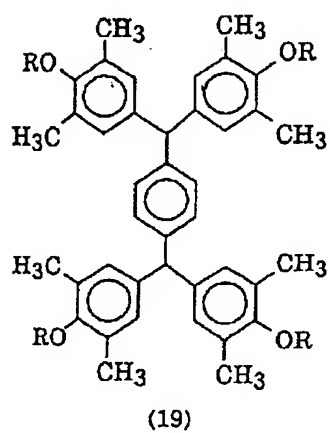
[0102]  
[Formula 48]



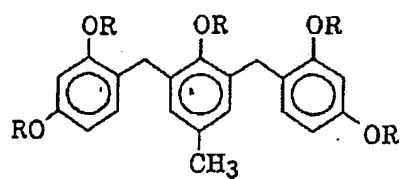
[0103]  
[Formula 49]



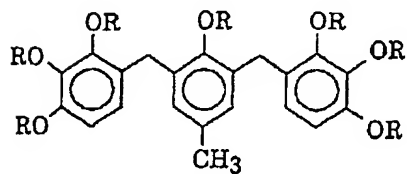
[0104]  
[Formula 50]



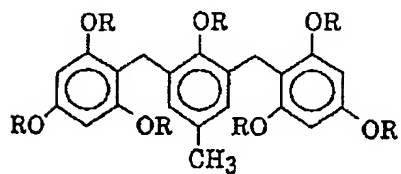
[0105]  
[Formula 51]



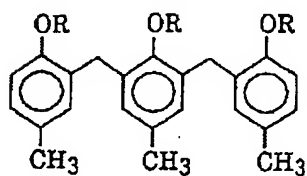
(22)



(23)

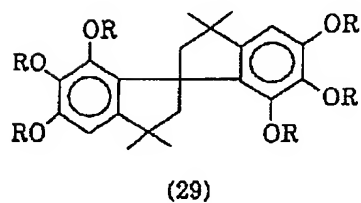
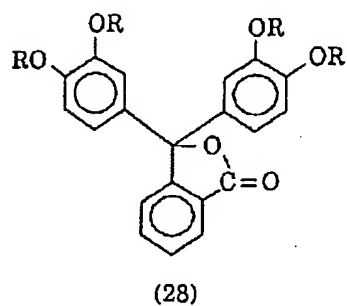
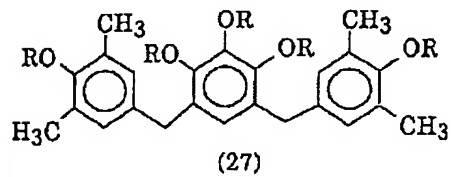
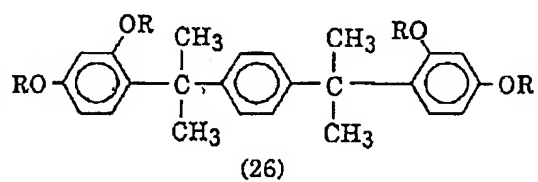


(24)



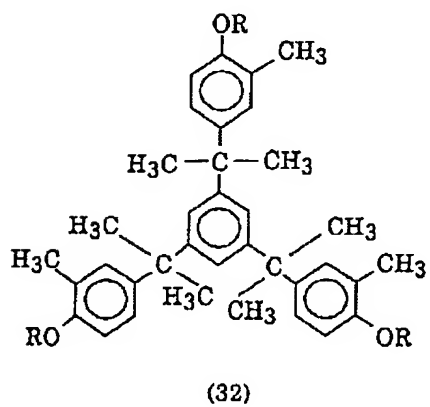
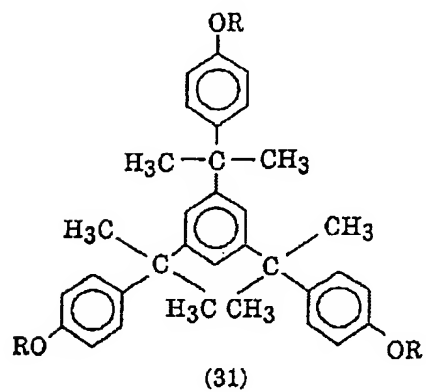
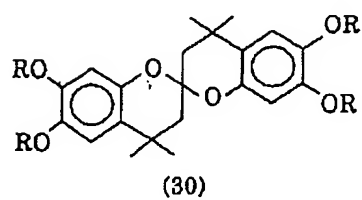
(25)

[0106]  
[Formula 52]

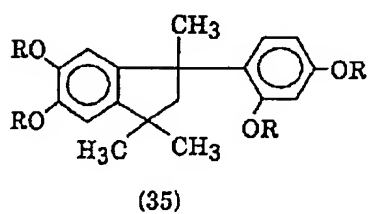
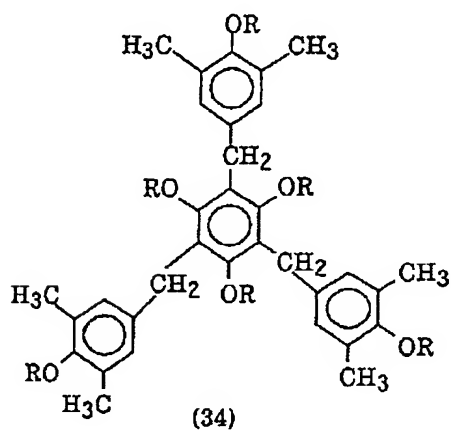
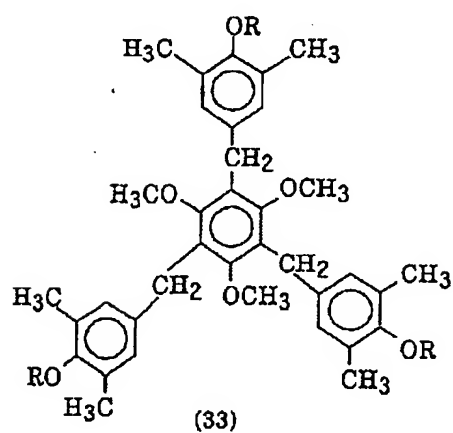


[0107]  
[Formula 53]

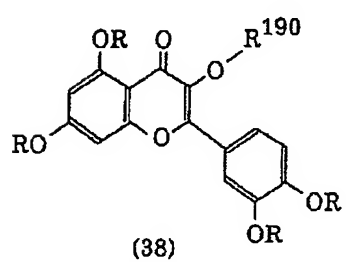
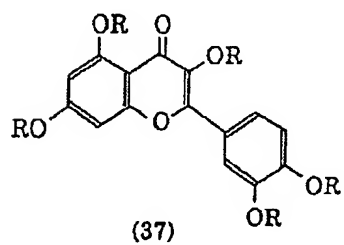
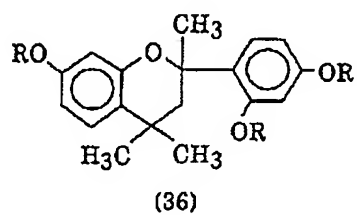




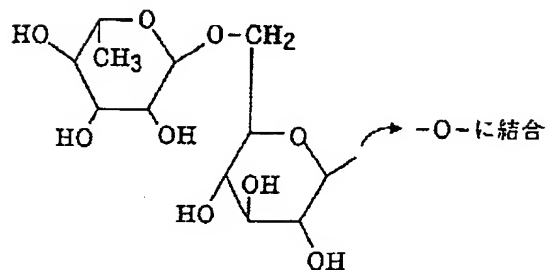
[0108]  
[Formula 54]



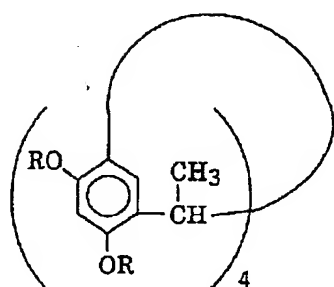
[0109]  
[Formula 55]



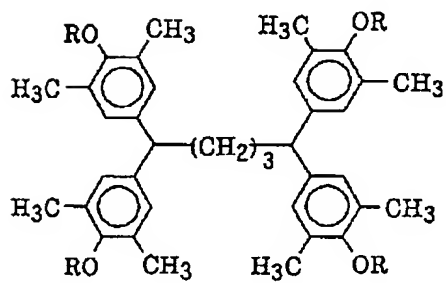
但し、R<sup>190</sup>:



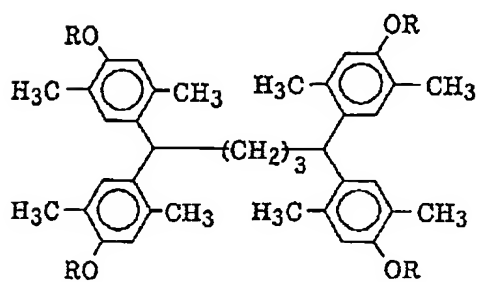
[0110]  
[Formula 56]



(39)

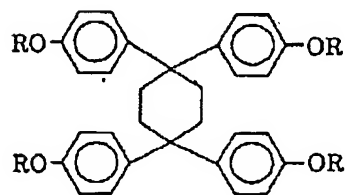


(40)

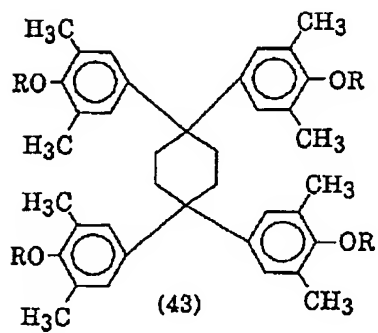


(41)

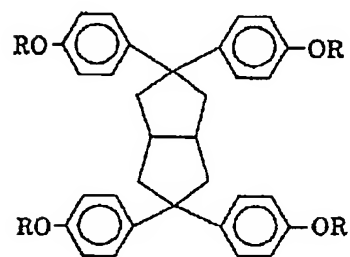
[0111]  
[Formula 57]



(42)

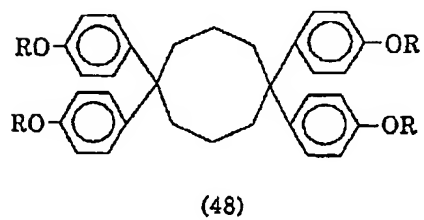
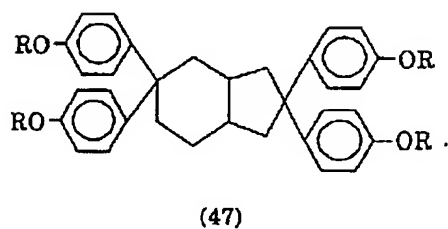
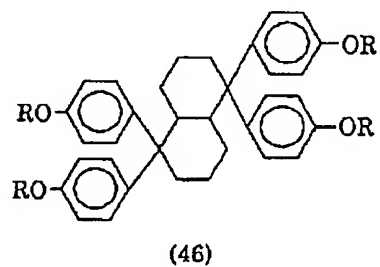
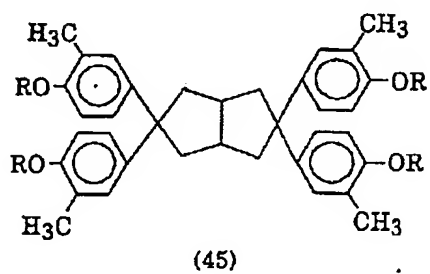


(43)

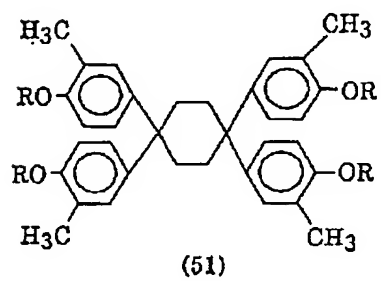
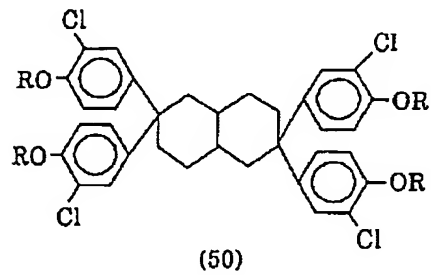
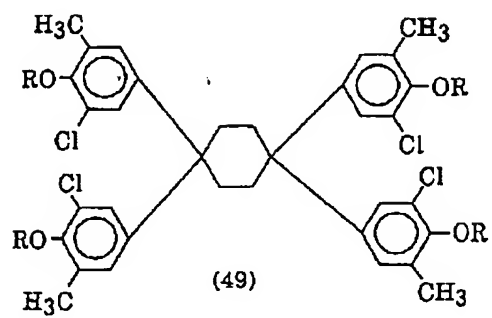


(44)

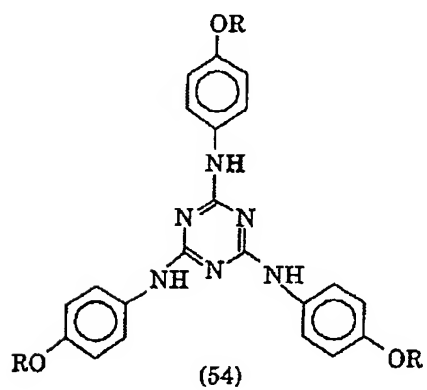
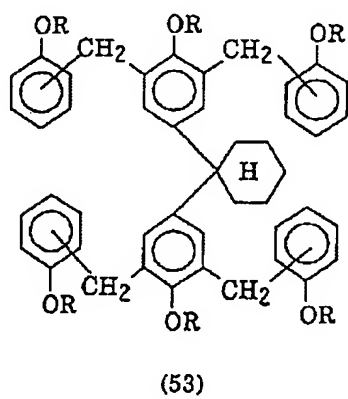
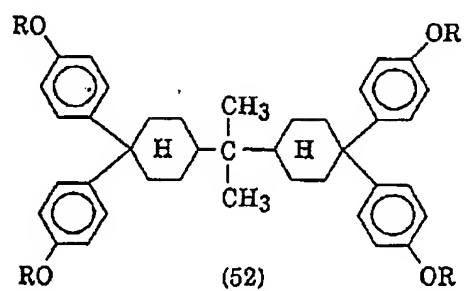
[0112]  
[Formula 58]



[0113]  
[Formula 59]

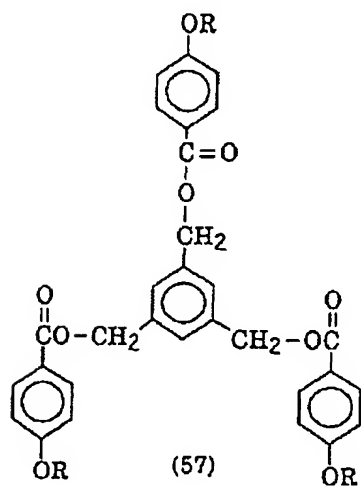
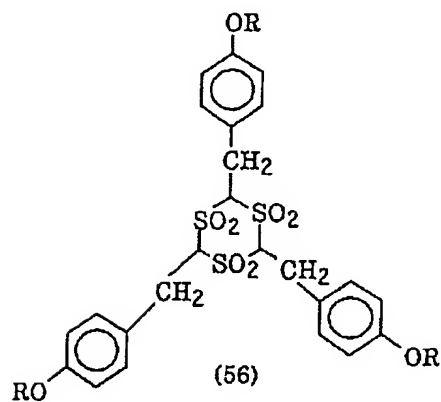
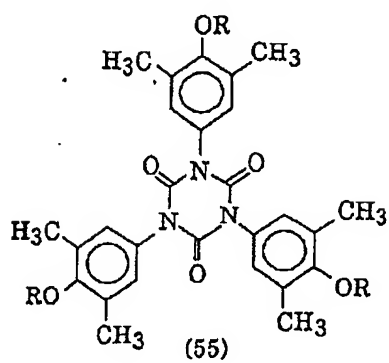


[0114]  
[Formula 60]

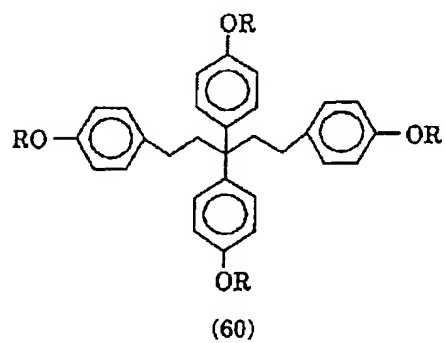
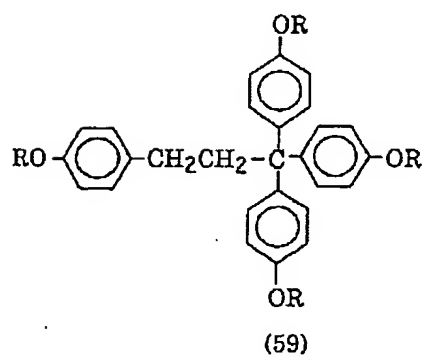
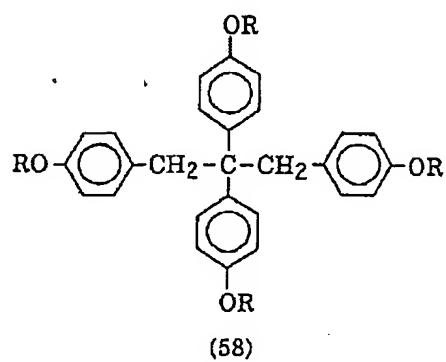


[0115]  
[Formula 61]

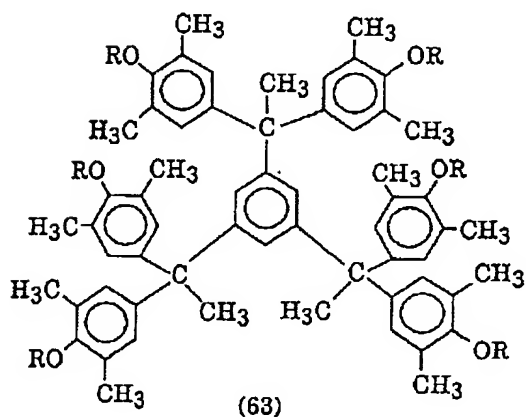
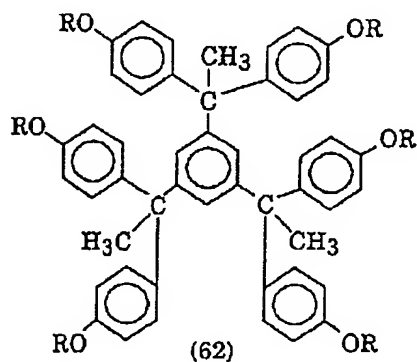
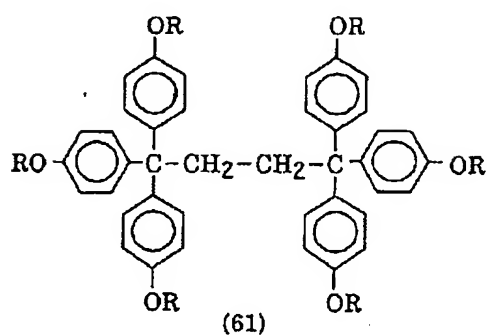




[0116]  
[Formula 62]

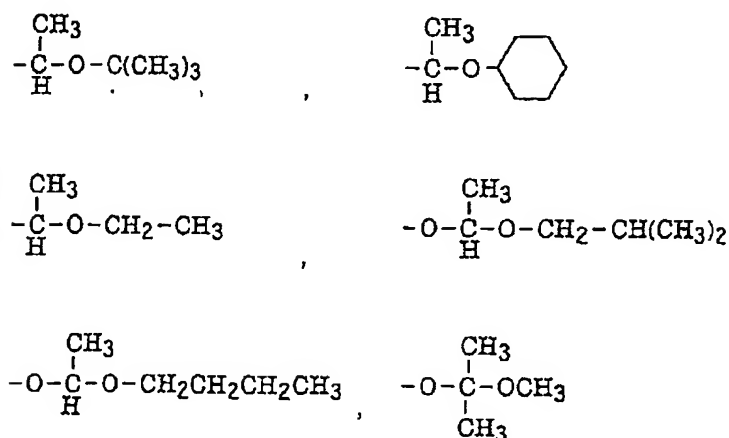


[0117]  
[Formula 63]



[0118] R in compound (1) - (63) is a hydrogen atom or [0119]. (A) In the case of the compound of a type, they are -CH<sub>2</sub>-COO-C(CH<sub>3</sub>)<sub>2</sub>-C<sub>6</sub>H<sub>5</sub>, -CH<sub>2</sub>-COO-C(CH<sub>3</sub>)<sub>3</sub>, and -COO-C(CH<sub>3</sub>)<sub>3</sub>. It is the radical chosen from inside, and, in the case of a (B) type compound, is [0120].

[Formula 64]



[0121] It is the radical chosen from \*\*. However, three pieces may be radicals other than a hydrogen atom by at least two pieces or structure, and each substituent R may not be the same radical.

[0122] The addition of the low-molecular lysis inhibition compound used for this invention is 3 - 30 % of the weight on the basis of the total-solids weight (except for a solvent) of a photosensitive coloring constituent, and is 5 - 25% of the weight of the range preferably. If there are few additions of the low-molecular lysis inhibition compound used for this invention than 3 % of the weight, the solubility of the whole system will fall, or membranous will fall, and if [ than 30 % of the weight ] more, pigment concentration will decrease, and image concentration falls and is not desirable.

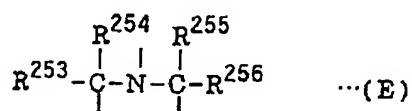
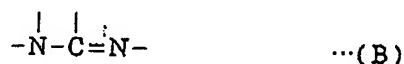
[0123] (4) Organic base nature compound : a nitrogen-containing basicity compound can be raised as a desirable organic base nature compound which can be used by this invention. As desirable chemical environment, the structure of following type (A) - (E) can be mentioned.

[0124]

[Formula 65]



ここで、 $\text{R}^{250}$ 、 $\text{R}^{251}$ および $\text{R}^{252}$ は、同一または異なり、水素原子、炭素数1~6のアルキル基、炭素数1~6のアミノアルキル基、炭素数1~6のヒドロシアルキル基または炭素数6~20の置換もしくは非置換のアリール基であり、ここで $\text{R}^{251}$ と $\text{R}^{252}$ は互いに結合して環を形成してもよい。



(式中、 $\text{R}^{253}$ 、 $\text{R}^{254}$ 、 $\text{R}^{255}$ および $\text{R}^{256}$ は、同一または異なり、炭素数1~6のアルキル基を示す)

[0125] Furthermore, a desirable compound is a nitrogen-containing basicity compound which has two or more nitrogen atoms of different chemical environment in a monad, and is a compound which has especially a compound or alkylamino radical including both ring structures containing the amino group and nitrogen atom which are not permuted [ a permutation or ] preferably. As a desirable example, the aminopyridine which is not permuted [ the guanidine which is not permuted / a permutation or / a permutation, or ], The amino pyrrolidine which is not permuted [ the amino alkyl pyridine which is not permuted / a permutation or / a permutation, or ], The pyrazole which is not permuted [ in DAZORU which is not permuted / a permutation or /, a permutation or ], The pyrimidine which is not permuted [ the pyrazine which is not permuted / a permutation or /, a permutation, or ], The amino alkyl morpholine which is not permuted [ the amino morpholine which is not permuted / the piperazine which is not permuted / the pyrazoline which is not permuted / the imidazoline which is not permuted / the pudding which is not permuted / a permutation or /, a permutation, or /, a permutation, or /, a permutation, or /, a permutation, or /, a permutation, or ] is mentioned. Desirable substituents are the amino group, an amino alkyl group, an alkylamino radical, an amino aryl group, an arylamino radical, an alkyl group, an alkoxy group, an acyl group, an acyloxy radical, an aryl group, an aryloxy group, a nitro group, a hydroxyl group, and a cyano group. As a desirable compound, especially Guanidine, 1, and 1-dimethyl guanidine, 1, 1, 3, 3, - tetramethyl guanidine, 2-aminopyridine, 3-aminopyridine, 4-aminopyridine, 2-dimethylamino pyridine, 4-dimethylaminopyridine, 2-diethylamino pyridine, 2-(aminomethyl) pyridine, 2-amino-3-methylpyridine, 2-amino-4-methylpyridine, 2-amino-5-methylpyridine, 2-amino-6-methylpyridine, 3-aminoethyl pyridine, 4-aminoethyl pyridine, 3-amino pyrrolidine, A piperazine, N-(2-aminoethyl) piperazine, N-(2-aminoethyl) piperidine, 4-amino - 2, 2, 6, and 6-tetramethylpiperidine, 4-piperidino piperidine, A 2-imino piperidine, 1-(2-aminoethyl) pyrrolidine, a pyrazole, 3-amino-5-methyl pyrazole, 5 - Amino-3-methyl-1-p-tolyl pyrazole, Pyrazine, 2-(aminomethyl)-5-methyl pyrazine, a pyrimidine, Although 2, 4-diamino pyrimidine, 4, 6-dihydroxy pyrimidine, 2-pyrazoline, 3-pyrazoline, N-amino morpholine, N-(2-aminoethyl) morpholine, etc. are mentioned, it is not limited to this.

[0126] These nitrogen-containing basicity compounds are independent, or are used together two or more sorts. The amount of the nitrogen-containing basicity compound used is usually 0.01 - 20 % of the weight preferably 0.01 to 30% of the weight to the solid content (except for a solvent) of a photosensitive coloring constituent. At less than 0.01 % of the weight, the effectiveness of this invention is not acquired, but if it exceeds 30 % of the weight, sensibility will fall.

[0127] (5) Coloring agent : as a coloring agent with which this invention is presented, well-known various colors, an inorganic pigment, or an organic pigment can be used conventionally. As a color, the disperse dye of a publication, an oil color, direct dye, acid dye, etc. can be used for a Color Index. There are fat dye and basic dye as a suitable color. Specifically, oil yellow #101, oil yellow #103, oil pink #312, the oil green BG, oil blue BOS, oil blue #603, oil black BY, oil black BS, oil black T-505 (above the ORIENT chemical-industry incorporated company make), a crystal violet (CI42555), Methyl Violet (CI42535), rhodamine B (CI45170B), Malachite Green (CI42000), a methylene blue (CI52015), etc. can be mentioned.

[0128] As an inorganic pigment, it is the metallic compounds shown by the metallic oxide, a metallic complex, etc., and metallic oxides, such as iron, cobalt, aluminum, cadmium, lead, copper, titanium, magnesium, chromium, zinc, and antimony, and the multiple oxide of said metal can specifically be mentioned. It is desirable to use various organic pigments in this invention.

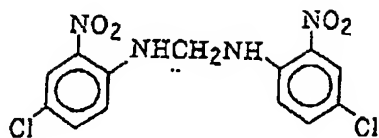
[0129] As an organic pigment, C.I.Pigment Yellow 11, 24, 31, 53, 83, 93, 99, 108, 109, 110, 138, 139, 150, 151, 154, and 167, 185, 191, 193, 194C.I.Pigment Orange 36, 38, 43, 66, 67, 68, 71C.I.Pigment Red 105, 122, 149, and 150, 155, 171, 175, and 176, 177, 209224, 254, and 255, 260C.I.Pigment Violet 19, 23, 32, and 39C.I.Pigment Blue 1, 2, 15:1, and 15:2, 15:3, 15:6, 16, 22, 60, 66C.I.Pigment Green 7, 36, 37C.I.Pigment Brown 25, 28C.I.Pigment Black 1, 20, 31, and 32 grades It can mention.

[0130] Although the following can be mentioned as a desirable pigment, it is not limited to these.

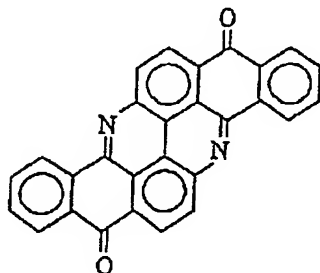
[0131]

[Formula 66]

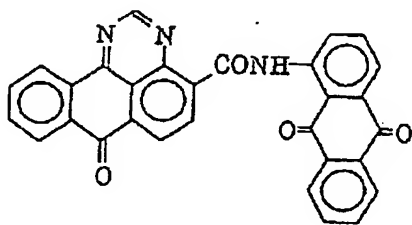
C.I. Pigment Yellow 11



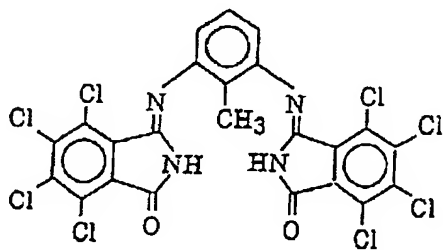
C.I. Pigment Yellow 24



C.I. Pigment Yellow 108



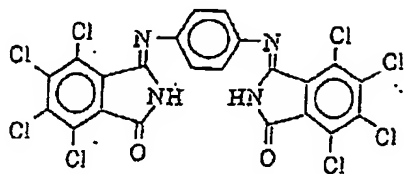
C.I. Pigment Yellow 109



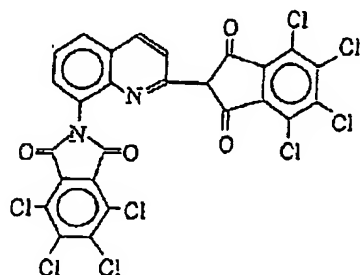
[0132]

[Formula 67]

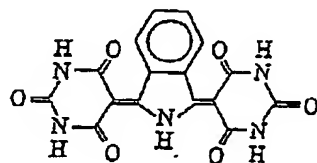
C.I. Pigment Yellow 110



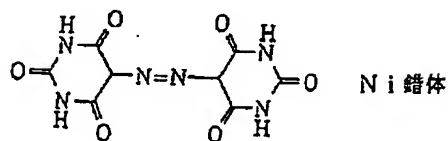
C.I. Pigment Yellow 138



C.I. Pigment Yellow 139

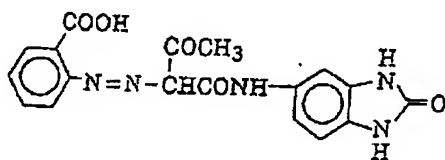


C.I. Pigment Yellow 150



Ni 錯体

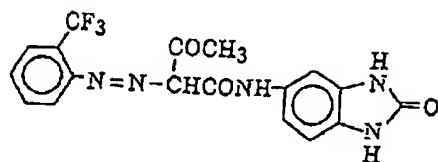
C.I. Pigment Yellow 151



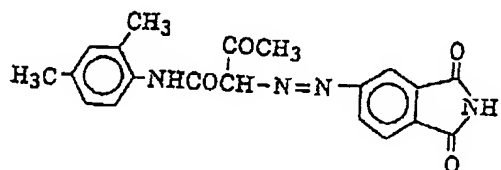
[0133]

[Formula 68]

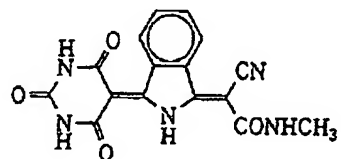
C.I. Pigment Yellow 154



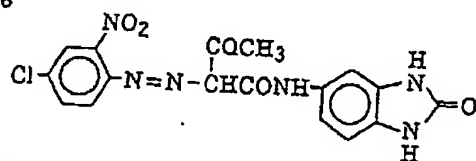
C.I. Pigment Yellow 167



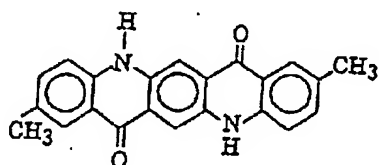
C.I. Pigment Yellow 185



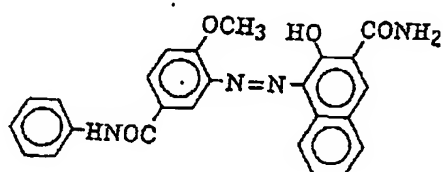
C.I. Pigment Orange 36



C.I. Pigment Red 122



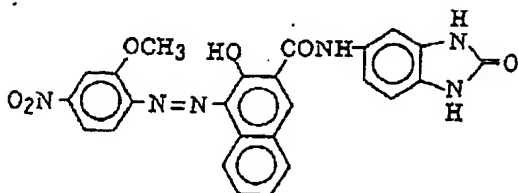
C.I. Pigment Red 150



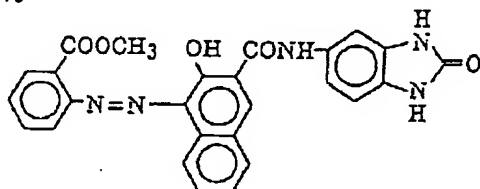
[0134]  
[Formula 69]



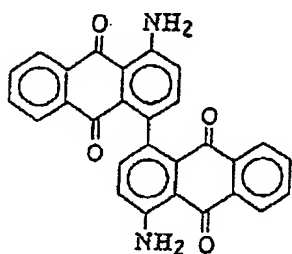
C. I. Pigment Red 171



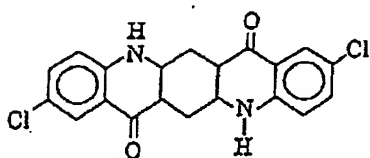
C. I. Pigment Red 175



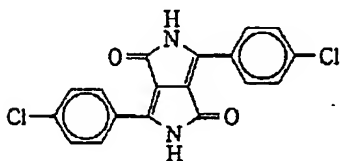
C. I. Pigment Red 177



C. I. Pigment Red 209



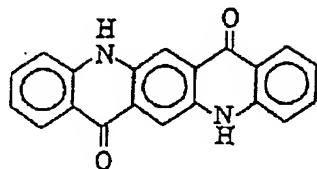
C. I. Pigment Red 254



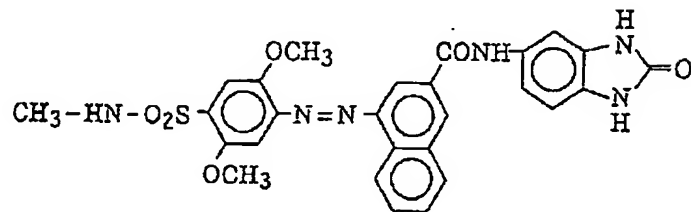
[0135]

[Formula 70]

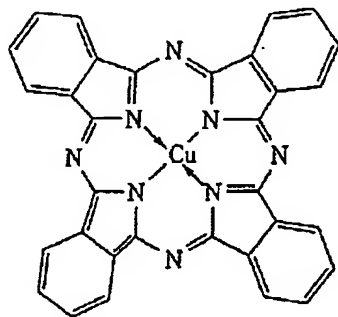
C. I. Pigment Violet 19



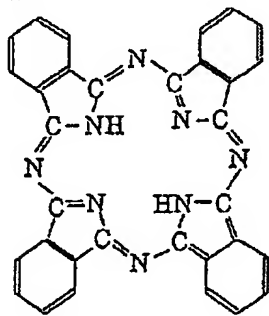
C. I. Pigment Violet 32



C. I. Pigment Blue 15

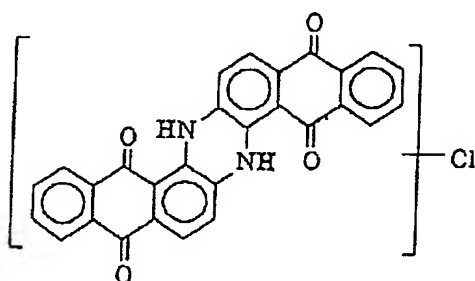


C. I. Pigment Blue 16

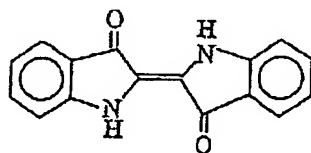


[0136]  
[Formula 71]

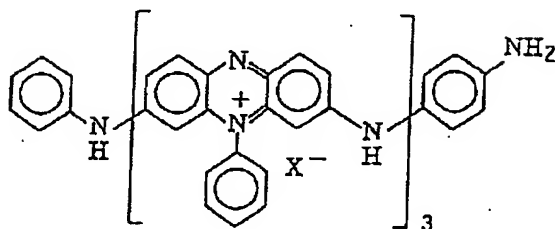
## C.I. Pigment Blue 22



## C.I. Pigment Blue 66



## C.I. Pigment Black 1



X: 銅クロム酸体

[0137] These pigments are supplied through desiccation after composition by various approaches. Usually, although it is made to dry from a water medium and is supplied as a powder object, since the big latent heat of vaporization is needed for water drying, the big heat energy for drying and considering as powder is given. Therefore, as for a pigment, it is common to form the floc (aggregated particle) to which primary particles gathered.

[0138] It is not easy to distribute to a particle the pigment which forms such floc. Therefore, it is desirable to process a pigment by various resin beforehand. As the approach of processing, there is the kneading approach by the Flushing processing, a kneader, the extruder, the ball mill, 2, or 3 roll mills. Among these, the kneading method by the Flushing processing, or 2 or 3 roll mills is suitable for atomization.

[0139] The Flushing processing is the approach of mixing the resin solution which usually dissolved in the solvent with which it does not mix with the water dispersion of a pigment, and water, extracting a pigment in an organic medium out of a water medium, and processing a pigment by resin. According to this approach, since it does not pass through desiccation of a pigment, condensation of a pigment can be prevented and distribution becomes easy. It is the approach of processing a pigment, by coating a pigment front face with resin in kneading by 2 or 3 roll mills by kneading a pigment and resin, applying a high share (shearing force), after mixing the solution of a pigment, resin, or resin.

[0140] Moreover, in this invention, the processing pigment processed by the aforementioned resin beforehand used by this invention, acrylic resin, vinyl chloride-vinyl acetate resin, maleic resin, ethyl cellulose resin, nitrocellulose resin, etc. can also be used with sufficient convenience. As a gestalt of the processing pigment processed by the resin used for this invention, and the above-mentioned various resin, the shape of the shape of resin, the powder which the pigment is distributing to homogeneity, and a paste, a pellet type, and a paste is desirable. Moreover, the uneven massive thing which resin gelled is not desirable.

[0141] Independent or in order to raise color purity, these organic pigments are combined variously and used. An example is shown below. as a red pigment -- an anthraquinone system pigment, a perylene system pigment, and a

diketopyrrolopyrrole pigment -- independent -- or -- those -- mixing with a kind, a JISUAZO system yellow pigment, or an iso indoline system yellow pigment is used at least. Furthermore, mixing with an anthraquinone system pigment, a perylene system pigment, or a diketopyrrolopyrrole pigment and mixing with the further above-mentioned yellow pigment are used. As an anthraquinone system pigment, for example, as the C.I. pigment red 177 and a perylene system pigment C. I. pigment red 155 as a diketopyrrolopyrrole pigment C. I. pigment red 254 is mentioned. Mixing with the C.I. pigment yellow 83, the C.I. pigment yellow 139, the C.I. pigment yellow 150, the C.I. pigment yellow 185, the C.I. pigment yellow 110, and the C.I. pigment yellow 109 was good in respect of color reproduction nature. As for the weight ratio of red pigments and a yellow pigment, 100:5 to 100:100 was good. Or less by 100:4, light transmittance of 400 to 500nm could not be stopped, and color purity was not able to be raised. Moreover, or more by 100:51, the dominant wavelength became a short wavelength twist and the gap from an NTSC target hue became large. The range of 100:60 was the more nearly optimal than especially 100:10.

[0142] As a green pigment, mixing with a halogenation phthalocyanine pigment independent, a JISUAZO system yellow pigment, or an iso indoline system yellow pigment was used, for example, mixing with C.I. pigment Green 7, 36, and 37, the C.I. pigment yellow 83 or the C.I. pigment yellow 139, the C.I. pigment yellow 150, the C.I. pigment yellow 185, the C.I. pigment yellow 110, and the C.I. pigment yellow 109 was good. As for the weight ratio of a green pigment and a yellow pigment, 100:40 was better than 100:5. Or less by 100:4, light transmittance of 400 to 450nm could not be stopped, and color purity was not able to be raised. Moreover, or more by 100:41, the dominant wavelength became a long wavelength twist and the gap from an NTSC target hue became large. The range of 100:20 was the more nearly optimal than especially 100:5. Thus, a yellow pigment is used together and used for red or a green pigment. If the dispersibility of a yellow pigment is bad, a fully transparent color filter will not be obtained.

[0143] as a blue pigment -- phthalocyanine pigment -- mixing with independent or a dioxazine system purple pigment was used, for example, mixing with the C.I. pigment blue 15:3 or the C.I. pigment blue 15:6, and the C.I. pigment violet 23 was good. As for the weight ratio of a blue pigment and a purple pigment, 100:50 was better than 100:5. Or less by 100:4, light transmittance of 400 to 420nm could not be stopped, and color purity was not able to be raised. Or more by 100:51, the dominant wavelength became a long wavelength twist and the gap from an NTSC target hue became large. The range of 100:20 was the more nearly optimal than especially 100:5.

[0144] Furthermore, pigment content sensitization resin with good dispersibility and distributed stability was obtained by using the powdered processing pigment which carried out micro-disperse of the aforementioned pigment to an acrylic resin, maleic-acid system resin, and vinyl chloride-vinyl acetate copolymer, ethyl cellulose resin, etc.

[0145] Moreover, the pigment concentration in the total solids of the photosensitive coloring constituent of the pigment of each color is 5 % of the weight - 70 % of the weight. At less than 5 % of the weight, if the depth of shade does not come out, it is not suitable as a color filter and it exceeds 70 % of the weight, sensibility will fall or the problem of membranous deteriorating will arise. It is 60 % of the weight from 20 % of the weight preferably. In the color filter produced by the pigment-content powder method, if the grain size of a pigment is large, a display contrast ratio will deteriorate remarkably for decline in permeability, and a \*\*\*\* operation. Moreover, it passes through the photosensitive coloring constituent which distributed the pigment, and a lifting, permeability, and a contrast ratio fall condensation compared with the first stage by the time. Moreover, spreading nature etc. is made to generate a problem. In recent years, highly minute-ization of a color filter is demanded and a raise in permeability and high contrast-ization are desired increasingly. As a pigment grain size, it is required to be below the wavelength of the light, when satisfying transparency and contrast. It is desirable to consider as the mean particle diameter of 0.01-0.2 micrometers in this invention.

[0146] (6) Resin which has the radical which an operation of an acid decomposes [ radical ] and increases the solubility in the inside of an alkali developer : it is resin which has the radical which decomposes with the acid used in the photosensitive coloring constituent in this invention, and may be decomposed into both the principal chain of resin, a side chain or a principal chain, and a side chain from an acid as resin which has the radical which increases the solubility in the inside of an alkali developer. Among this, the resin which has the radical which may be decomposed from an acid in a side chain is more desirable. A radical desirable as a radical which may be decomposed from an acid is -COOA0 and -O-B0. As a radical which is a radical and contains these further, they are -R0-COOA0 or -Ar-O-B0. The radical shown is mentioned. It is A0 here. -C (R01) (R02) (R03), -Si (R01) (R02) (R03), or 06 -C(R04) (R05)-O-R are shown. B0 -A0 Or -CO-O-A0 A radical is shown (R0, R01- the thing and homonymy of the after-mentioned [ R06 and Ar ]).

[0147] They are a silyl ether group, a cumyl ester group, an acetal radical, a tetrahydropyranyl ether group, a tetrahydropyranyl ester group, an enol ether group, an enol ester group, the alkyl ether radical of the 3rd class, the alkyl ester group of the 3rd class, the alkyl carbonate radical of the 3rd class, etc. preferably as an acidolysis nature machine. Furthermore, they are the 3rd class alkyl ester group, the 3rd class alkyl carbonate radical, a cumyl ester group, an acetal radical, and a tetrahydropyranyl ether group preferably.

[0148] Next, as parent resin in case the radical which may be decomposed from these acids joins together as a side chain, it is a side chain. - They are OH or -COOH, and alkali fusibility resin that has a -R0-COOH or -Ar-OH radical preferably. For example, the above-mentioned alkali fusibility resin can be mentioned.

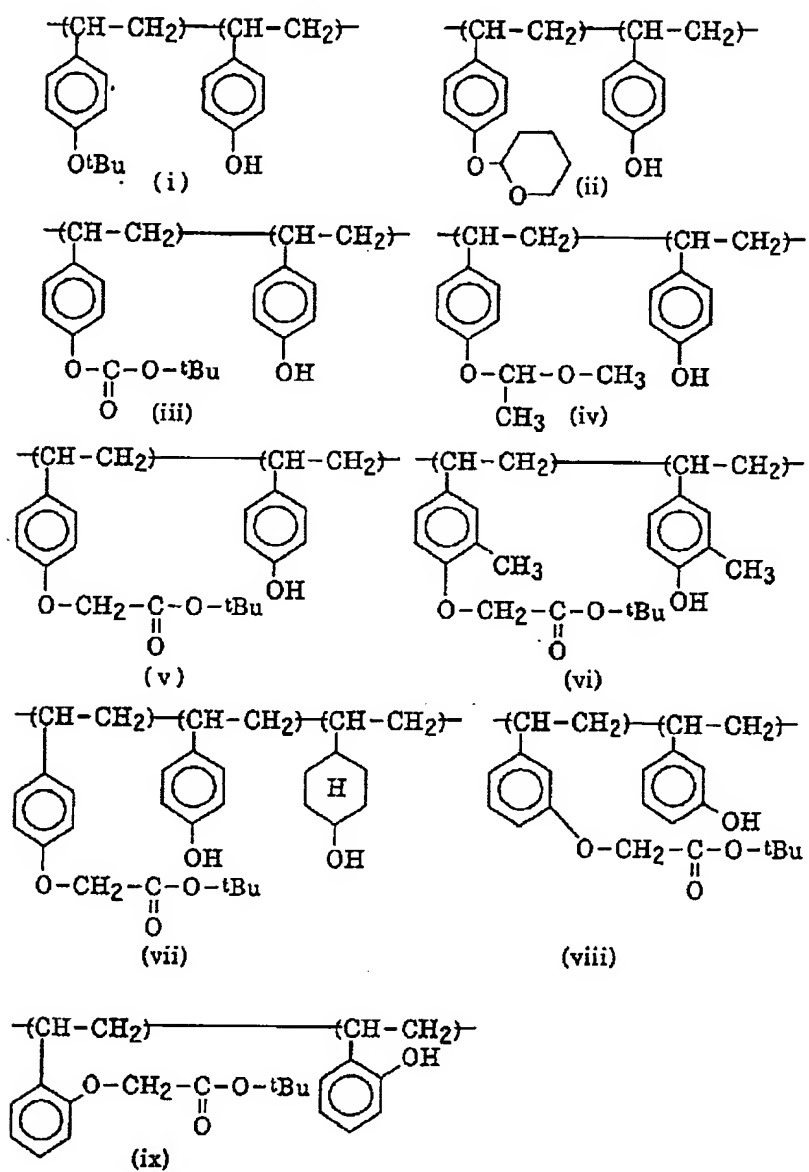
[0149] The alkali dissolution rate of these alkali fusibility resin is measured by 0.261-N tetramethylammonium hydroxide (TMAH) (23 degrees C), and its thing 170A / more than a second is desirable. It is a thing 330A / more than a second especially preferably (A is angstrom). From such a viewpoint, especially desirable alkali fusibility resin is a part of o-, m-, p-Pori (hydroxystyrene) and these copolymers, hydrogenation Pori (hydroxystyrene), halogen or alkylation Pori (hydroxystyrene), Pori (hydroxystyrene), O-alkylation or O-acylation object, a styrene-hydroxystyrene copolymer, an alpha-methyl-styrene-hydroxystyrene copolymer, and hydrogenation novolak resin.

[0150] The resin which has the radical which may be decomposed from the acid used for this invention makes the precursor of the radical which may be decomposed from an acid react to alkali fusibility resin, or copolymerizes the alkali fusibility resin monomer which the radical which may be decomposed from an acid combined with various monomers, and can obtain it as indicated by Europe JP,254853,B, JP,2-25850,A, 3-223860, 4-251259, etc.

[0151] Although the example of resin of having the radical which may be decomposed with the acid used for this invention is shown below, this invention is not limited to these.

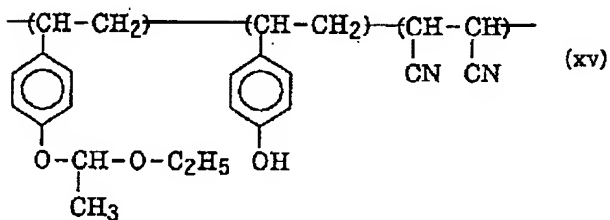
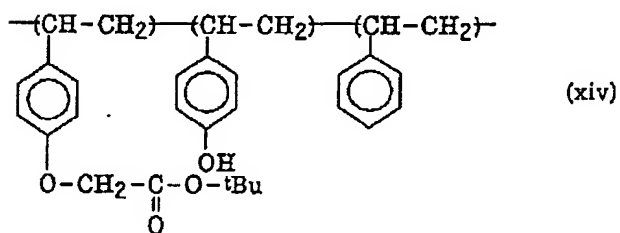
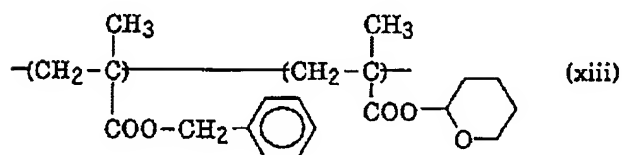
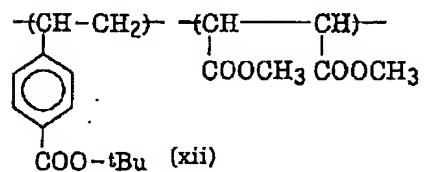
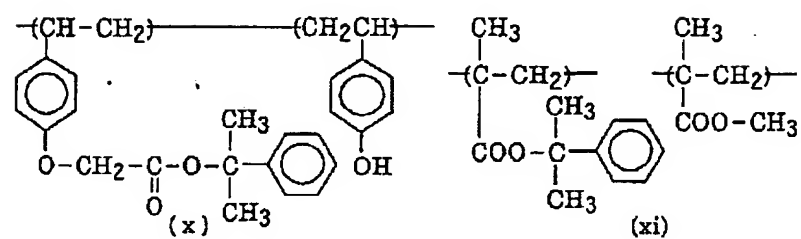
[0152]

[Formula 72]

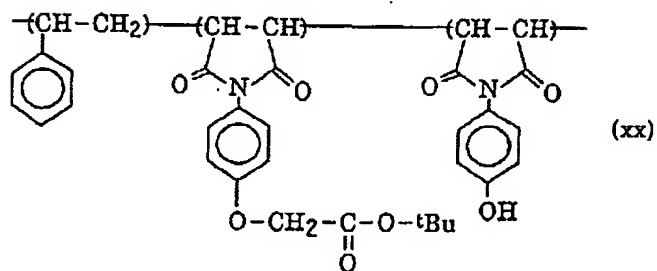
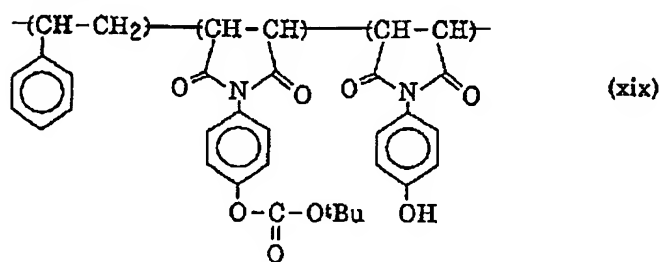
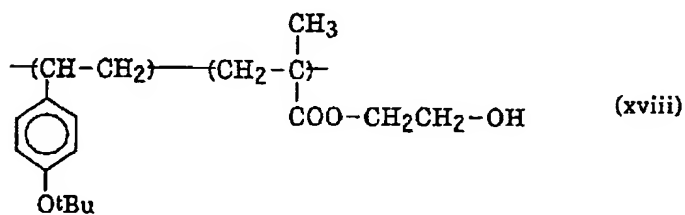
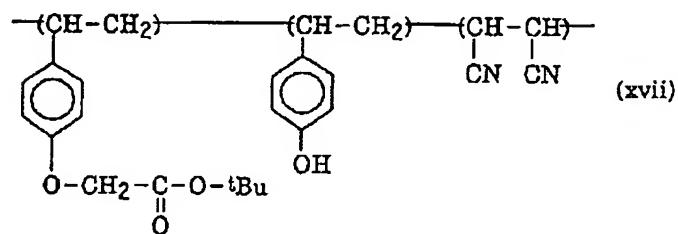
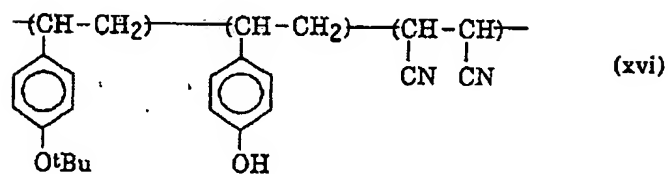


[0153]

[Formula 73]

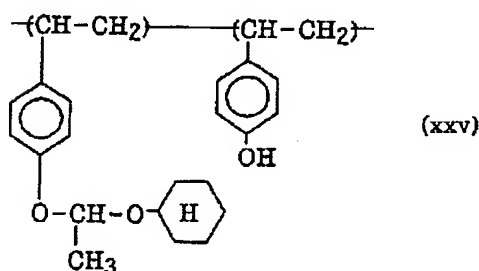
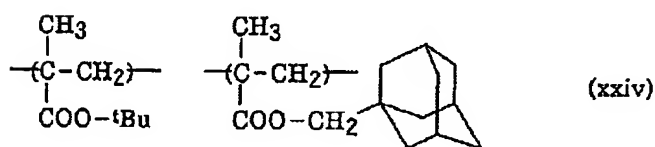
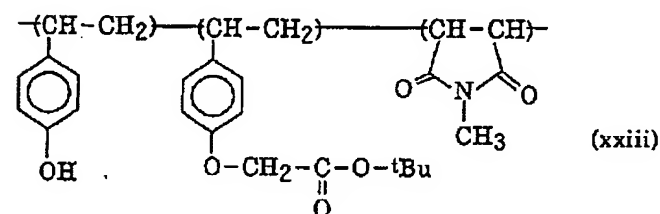
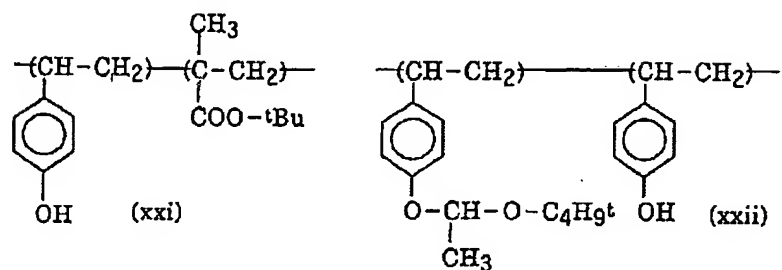


[0154]  
[Formula 74]



[0155]  
[Formula 75]





[0156] The content of the radical which may be decomposed from an acid has the number of the radicals which may be decomposed from the acid in resin (B), and the number of the alkali fusibility radicals which are not protected by the radical which may be decomposed from an acid (S), and is expressed with  $B/(B+S)$ . content -- desirable -- 0.01 to 0.5 -- more -- desirable -- 0.05 to 0.40 -- it is 0.05-0.30 still more preferably.  $B/(B+S) >$  It becomes the cause of the film contraction after PEB, the poor adhesion to a substrate, and Society for Cutting Up Men and is not desirable at 0.5. On the other hand, since a standing wave may remain on a pattern side attachment wall notably in  $B/(B+S) < 0.01$ , it is not desirable. As weight average molecular weight of the resin containing the above-mentioned acidolysis nature machine, 3000-200000 are desirable and are 8000-70000 more preferably. In this range, film decrease of an unexposed part cannot take place easily, and the solubility of the exposure section is good. As a content in the constituent of the resin containing the above-mentioned acidolysis nature machine, it is solid content conversion, and 10 - 90 % of the weight is desirable, and is 20 - 70 % of the weight more preferably.

[0157] (7) The component of others which can be used for this invention : the photosensitive coloring constituent of this invention can be made to contain the compound which has two or more phenol nature OH radicals which promote the solubility over a plasticizer, a surfactant, a photosensitizer, and a developer further if needed.

[0158] The compound which has two or more phenol nature OH radicals which can be used by this invention is a with a molecular weight of 1000 or less phenolic compound preferably. Moreover, although it is required in a molecule to have at least two phenolic hydroxyl groups, if this exceeds 10, the amelioration effectiveness of development latitude will be lost. Moreover, the ratio of a phenolic hydroxyl group and a ring has a large thickness dependency at less than 0.5, and there is an inclination for development latitude to become narrow. It becomes difficult and is not desirable for the stability of this constituent to deteriorate, if this ratio exceeds 1.4, and to acquire a high resolution and good thickness dependency.

[0159] The desirable addition of this phenolic compound is 2 - 50 % of the weight to alkali fusibility resin, and is 5 - 30 % of the weight still more preferably. The new fault that development residue gets worse and a pattern deforms in the

addition exceeding 50 % of the weight at the time of development generates and is not desirable.

[0160] Such a with a molecular weight of 1000 or less phenolic compound can refer to an approach given in JP,4-122938,A, JP,2-28531,A, United States patent 4916210th, and the Europe patent 219294th grade, and can compound it easily in this contractor. Although the example of a phenolic compound is shown below, the compound which can be used by this invention is not limited to these.

[0161] Resorcinol, phloroglucine, 2 and 3, 4-trihydroxy benzophenone, A 2, 3, 4, and 4'-tetra-hydroxy benzophenone, 2, 3 and 4, 3', 4', and 5'-hexa hydroxy benzophenone, Acetone-pyrogallol condensation resin, FURORO glucoside, 2 and 4, 2', and 4'-biphenyl tetrol, 4,4'-thiobis (1, 3-dihydroxy) benzene, 2, 2', 4, and 4'-tetra-hydroxy diphenyl ether, 2, 2', 4, and 4'-tetra-hydroxy diphenyl sulfoxide, 2, 2', 4, and 4'-tetra-hydroxy diphenyl sulfone, tris (4-hydroxyphenyl) methane, 1 and 1-bis(4-hydroxyphenyl) cyclohexane, 4, and 4-(alpha-methyl benzylidene) bisphenol, alpha, alpha', alpha"-tris (4-hydroxyphenyl) - 1, 3, 5-triisopropyl benzene, alpha, alpha', alpha"-tris (4-hydroxyphenyl)-1-ethyl-4-isopropylbenzene, 1, 2, and 2-tris (hydroxyphenyl) propane, 1 and 1, 2-tris (3, 5-dimethyl-4-hydroxyphenyl) propane, 2, 2, 5, and 5-tetrakis (4-hydroxyphenyl) hexane, 1, 2-tetrakis (4-hydroxyphenyl) ethane, 1 and 1, 3-tris (hydroxyphenyl) butane, a Para [alpha, alpha, alpha', and alpha'-tetrakis (4-hydroxyphenyl)]-xylene, etc. can be mentioned.

[0162] Furthermore, a spectral sensitization agent which is listed below can be added and sensibility can be given to i or g line for the photosensitive coloring constituent of this invention by making a long wavelength field carry out sensitization from far-ultraviolet [ in which the photo-oxide generating agent to be used does not have absorption ]. As a suitable spectral sensitization agent, specifically Benzophenone, p, and p'-tetramethyldiaminobenzophenone, A p and p'-tetraethyl ethylamino benzophenone, 2-chloro thioxan ton, An anthrone, a 9-ethoxy anthracene, an anthracene, a pyrene, perylene, Phenothiazin, benzyl, an acridine orange, a benzoflavin, SETOFURABIN-T, 9, 10-diphenyl anthracene, and 9-full -- me -- non An acetophenone, a phenanthrene, 2-nitro fluorene, 5-nitroacenaphthene, A benzoquinone, a 2-chloro-4-nitroaniline, N-acetyl-para nitroaniline, Para nitroaniline, an N-acetyl-4-nitro-1-naphthylamine, PIKURAMIDO, anthraquinone, 2-ethyl anthraquinone, 2-tert-butyl anthraquinone 1, 2-bends Anthraquinone, Although it is a 3-methyl -1, 3-diaza -1, 9-bends anthrone, dibenzal acetone, 1,2-naphthoquinone, 3, and 3'-carbonyl-screw (5, 7-dimethoxy carbonyl coumarin), coronene, etc., it is not limited to these. Moreover, these spectral sensitization agents are usable also as an extinction agent of the far-ultraviolet light of the light source. In this case, an extinction agent reduces the reflected light from a substrate, is lessening effect of the multiple echo in the photosensitive coloring constituent film, and discovers the effectiveness of standing wave amelioration.

[0163] The photosensitive coloring constituent of this invention is melted to the solvent which dissolves each above-mentioned component, and is applied on a base material. As a solvent used here, ethylene dichloride, a cyclohexanone, Cyclopentanone, 2-heptanone, gamma-butyrolactone, a methyl ethyl ketone, Ethylene glycol monomethyl ether, ethylene glycol monoethyl ether, 2-methoxy ethyl acetate, ethylene glycol monoethyl ether acetate, Propylene glycol monomethyl ether, propylene-glycol-monomethyl-ether acetate, Toluene, ethyl acetate, methyl lactate, ethyl lactate, methoxy methyl propionate, ethoxy ethyl propionate, methyl pyruvate, pyruvic-acid ethyl, pyruvic-acid propyl, N,N-dimethylformamide, dimethyl sulfoxide, N-methyl pyrrolidone, a tetrahydrofuran, etc. are desirable, and independent in these solvents -- or it is mixed and used.

[0164] A surfactant can also be added to the above-mentioned solvent. Specifically The polyoxyethylene lauryl ether, polyoxyethylene stearylether, Polyoxyethylene alkyl ether, such as the polyoxyethylene cetyl ether and the polyoxyethylene oleyl ether Polyoxyethylene alkyl aryl ether, such as the polyoxyethylene octyl phenol ether and the polyoxyethylene nonyl phenol ether Polyoxyethylene polyoxypropylene block copolymers Sorbitan monolaurate, sorbitan monopalmitate, sorbitan monostearate, Sorbitan fatty acid esters, such as sorbitan monooleate, sorbitan trioleate, and sorbitan tristearate Polyoxyethylene sorbitan monolaurate, polyoxyethylene sorbitan monopalmitate, Polyoxyethylenesorbitan monostearate, polyoxyethylene sorbitan trioleate, The Nonion system surfactants, such as polyoxyethylene sorbitan fatty acid ester, such as polyoxyethylene sorbitan tristearate, EFUTOPPU EF301, EF303, and EF352 (new Akita formation Make), Megger fucks F171 and F173 (Dainippon Ink make) Fluorad FC430 and FC431 (Sumitomo 3M make), Fluorochemical surfactants, such as the Asahi guard AG710, Sir chlorofluocarbon S-382, and SC101, SC102, SC103, SC104, SC105, SC106 (Asahi Glass Co., Ltd. make), Organosiloxane polymer KP341 (Shin-Etsu Chemical Co., Ltd. make), an acrylic-acid system or methacrylic-acid system (\*\*) polymerization poly flow No.75, No.95 (product made from Kyoeisha Fats-and-oils Chemical industry), etc. can be mentioned. The loadings of these surfactants are usually below 1 weight section preferably below 2 weight sections per solid content 100 weight

section in the constituent of this invention. You may add independently and these surfactants can also be added in some combination.

[0165] As a developer of the photosensitive coloring constituent of this invention A sodium hydroxide, a potassium hydroxide, a sodium carbonate, a sodium silicate, Inorganic alkali, such as a meta-sodium silicate and aqueous ammonia, ethylamine, Secondary amines, such as primary amines, such as n propylamine, diethylamine, and G n butylamine Tertiary amines, such as triethylamine and methyl diethylamine, dimethylethanolamine, Alkaline water solutions, such as annular amines, such as quarternary ammonium salt, such as alcoholic amines, such as triethanolamine, tetramethylammonium hydroxide, and tetraethylammonium hydroxide, a pyrrole, and PIHERIJIN, can be used.

[0166] The color filter using the photosensitive coloring constituent by this invention produces the photosensitive coloring constituent of this invention by spreading, exposure afterbaking, and developing negatives and forming an image pattern on a transparence substrate. As the exposure light source, they are an extra-high pressure mercury lamp, a high-pressure mercury lamp, a low-pressure mercury lamp, and Deep. A thing with an exposure wavelength [, such as UV mercury lamp, a xenon lamp, a metal halide lamp and an excimer laser lamp, ] of 150-400nm is raised.

[0167]

[Example] Next, although an example explains this invention still more concretely, this invention is not limited to these examples.

[Production of pigment dispersion liquid]

Pigment dispersion liquid R EFKA-47 ( pigment agent made from EFKA) The two sections C.I.Pigment Red 177 The 20 sections Propylene-glycol-monomethyl-ether acetate After stirring the 80 sections by DISUPA and making it the dispersion liquid of homogeneity, it distributes by dynamill (SHIMMARU enterprises company make) using diameter zirconia beads of 0.5mm. When grain size was measured by measuring instrument CAPA-700 (Horiba make) whenever [ centrifugal transparency type particle-size-distribution ], average grain size was 0.08 micrometers. The yellow of the following presentation and green and blue pigment dispersion liquid were produced like the following.

Pigment dispersion liquid Y EFKA-46 ( pigment agent made from EFKA) The 2.5 sections C.I.Pigment Yellow 139 The 20 sections Propylene-glycol-monomethyl-ether acetate The 50 sections Cyclohexanone The 29.5 sections Average grain size is 0.07 micrometers similarly. Pigment dispersion liquid G EFKA-452 ( pigment agent made from EFKA) The three sections C.I.Pigment Green 36 The 20 sections Propylene-glycol-monomethyl-ether acetate The 50 sections Cyclohexanone The 27 sections Average grain size of 0.10 micrometers of a pigment Pigment dispersion liquid B EFKA-47 ( pigment agent made from EFKA) The three sections C.I.Pigment Blue 15:6 The 17 sections Propylene-glycol-monomethyl-ether acetate The 50 sections Cyclohexanone The 30 sections Average grain size of 0.06 micrometers of a pigment [0168] The photosensitive coloring constituent of this invention was prepared using the compound of an example 1 - the 21 above-mentioned pigment dispersion liquid, and this invention given in the following table -1. The solvent used propylene-glycol-monomethyl-ether acetate. Each solid content concentration is 20wt(s)%. This constituent was applied to the glass substrate for color filters, and was dried for 2 minutes at 100 degrees C. Next, it let the mask with a pattern pass and exposed with the deepUV lamp. After exposure, 110 degrees C was heated for 60 seconds, and it was immersed in the 2wt% tetramethylammonium hydroxide water solution, and negatives were developed. Then, it exposed completely with the light exposure of the amount of 2 double of the sensibility of each sample, and heated for 3 minutes at 150 degrees C, and the sample was produced.

[0169]

[Table 1]

表－１感光性着色組成物の組成

実施例	A 顔料分散液	B アルカリ 可溶性樹脂	C 酸発生 剤	D 溶解阻 止剤	E 酸分解 性樹脂	F 塩基性 化合物
1	分散液 Y3.0 部 分散液 R7.0 部	B-2 2.0 部	C-1 0.05 部	D-1 0.50 部		F-1 0.01 部
2	分散液 Y3.0 部 分散液 R7.0 部	B-2 2.0 部	C-2 0.05 部	D-2 0.50 部		F-2 0.01 部
3	分散液 Y3.0 部 分散液 R7.0 部	B-2 2.0 部	C-3 0.05 部	D-3 0.50 部		F-3 0.01 部
4	分散液 Y3.0 部 分散液 R7.0 部		C-1 0.05 部		E-1 2.0 部	F-1 0.01 部
5	分散液 Y3.0 部 分散液 R7.0 部		C-2 0.05 部		E-3 2.0 部	F-3 0.01 部
6	分散液 Y3.0 部 分散液 R7.0 部		C-2 0.06 部	D-1 0.50 部	E-4 2.0 部	F-3 0.01 部
7	分散液 Y4.0 部 分散液 G6.0 部		PAG C-2 0.06 部	D-2 0.50 部	E-5 2.0 部	F-3 0.01 部
8	分散液 Y4.0 部 分散液 G6.0 部	B-2 2.0 部	C-1 0.05 部	D-1 0.50 部		F-1 0.01 部
9	分散液 Y4.0 部 分散液 G6.0 部	B-2 2.0 部	C-2 0.05 部	D-2 0.50 部		F-2 0.01 部
10	分散液 Y4.0 部 分散液 G6.0 部	B-2 2.0 部	C-3 0.05 部	D-3 0.50 部		F-3 0.01 部
11	分散液 Y4.0 部 分散液 G6.0 部		C-1 0.05 部		E-1 2.0 部	F-1 0.01 部
12	分散液 Y4.0 部 分散液 G6.0 部		C-2 0.05 部		E-3 2.0 部	F-3 0.01 部
13	分散液 Y4.0 部 分散液 G6.0 部		C-2 0.06 部	D-1 0.50 部	E-4 2.0 部	F-3 0.01 部
14	分散液 Y4.0 部 分散液 G6.0 部		PAG C-2 0.06 部	D-2 0.50 部	E-5 2.0 部	F-3 0.01 部
15	分散液 B10 部	B-2 2.0 部	C-1 0.05 部	D-1 0.50 部		F-1 0.01 部

[0170]

[Table 2]

表-1 (つづき)

実施例	A 顔料分散液	B アルカリ 可溶性樹脂	C 酸発生 剤	D 溶解阻 止剤	E 酸分解 性樹脂	F 塩基性 化合物
16	分散液 B10 部	B-2 2.0 部	C-2 0.05 部	D-2 0.50 部		F-2 0.01 部
17	分散液 B10 部	B-2 2.0 部	C-3 0.05 部	D-3 0.50 部		F-3 0.01 部
18	分散液 B10 部		C-1 0.05 部		E-1 2.0 部	F-1 0.003 部
19	分散液 B10 部		C-2 0.05 部		E-3 2.0 部	F-3 0.01 部
20	分散液 B10 部		C-2 0.06 部	D-1 0.50 部	E-4 2.0 部	F-3 0.01 部
21	分散液 B10 部		PAG C-2 0.06 部	D-2 0.50 部	E-5 2.0 部	F-3 0.01 部

[0171] The photosensitive coloring constituent for a comparison was prepared using the compound the example 1 of a comparison - the 12 above-mentioned pigment dispersion liquid, and given in the following table -2, and the sample was produced like examples 1-21.

[0172]

[Table 3]

比較例 1 ~ 12

表-2 感光性着色組成物の組成

比較例	A 顔料分散液	B アルカリ 可溶性樹脂	C 酸発生 剤	D 溶解阻 止剤	E 酸分解 性樹脂
1	分散液 Y3.0 部 分散液 R7.0 部		C-1 0.05 部		E-1 2.0 部
2	分散液 Y3.0 部 分散液 R7.0 部		C-2 0.05 部		E-3 2.0 部
3	分散液 Y3.0 部 分散液 R7.0 部		C-2 0.06 部	D-1 0.50 部	E-4 2.0 部
4	分散液 Y4.0 部 分散液 G6.0 部		PAG C-2 0.06 部	D-2 0.50 部	E-5 2.0 部
5	分散液 Y4.0 部 分散液 G6.0 部		C-1 0.05 部		E-1 2.0 部
6	分散液 Y4.0 部 分散液 G6.0 部		C-2 0.05 部		E-3 2.0 部
7	分散液 Y4.0 部 分散液 G6.0 部		C-2 0.06 部	D-1 0.50 部	E-4 2.0 部
8	分散液 Y4.0 部 分散液 G6.0 部		PAG C-2 0.06 部	D-2 0.50 部	E-5 2.0 部

[0173]

[Table 4]

表-2 (つづき)

比較例	A 顔料分散液	B アルカリ 可溶性樹脂	C 酸発生 剤	D 溶解阻 止剤	E 酸分解 性樹脂
9	分散液 B10 部		C-1 0.05 部		E-1 2.0 部
10	分散液 B10 部		C-2 0.05 部		E-3 2.0 部
11	分散液 B10 部		C-2 0.06 部	D-1 0.50 部	E-4 2.0 部
12	分散液 B10 部		PAG C-2 0.06 部	D-2 0.50 部	E-5 2.0 部

[0174] [Evaluation] The following table -3 publication was evaluated to the sample of the above-mentioned examples 1-21. A result is shown in Table -3.

[0175]

[Table 5]

表-3 実施例の評価結果


実施例	感度	現像ラチチュード	エッジプロファイル	透過率
1	○	○	○	○
2	○	○	○	○
3	○	○	○	○
4	○	○	○	○
5	○	○	○	○
6	○	○	○	○
7	○	○	○	○
8	○	○	○	○
9	○	○	○	○
10	○	○	○	○
11	○	○	○	○
12	○	○	○	○
13	○	○	○	○
14	○	○	○	○
15	○	○	○	○
16	○	○	○	○
17	○	○	○	○
18	○	○	○	○
19	○	○	○	○
20	○	○	○	○
21	○	○	○	○

[0176] Moreover, the following table -4 publication was evaluated to the sample of the examples 1-12 of a comparison. A result is shown in Table -4.

[Table 6]

比較例	感度	現像ラチチュード	エッジプロファイル	透過率
1	○	○	×	○
2	○	○	×	×
3	○	○	△	○
4	○	○	△	○
5	○	○	×	○
6	○	○	×	×
7	○	○	△	○
8	○	○	△	○
9	○	○	×	○
10	○	○	×	×
11	○	○	△	○
12	○	○	△	○

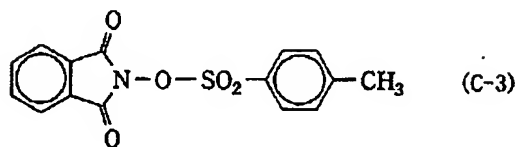
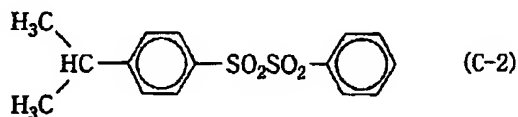
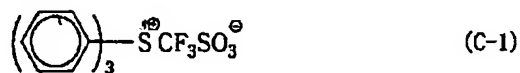
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(Mw12000)

[Formula 77]

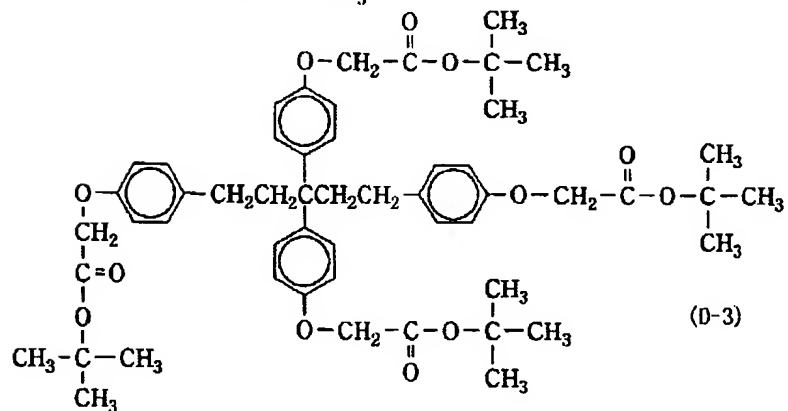
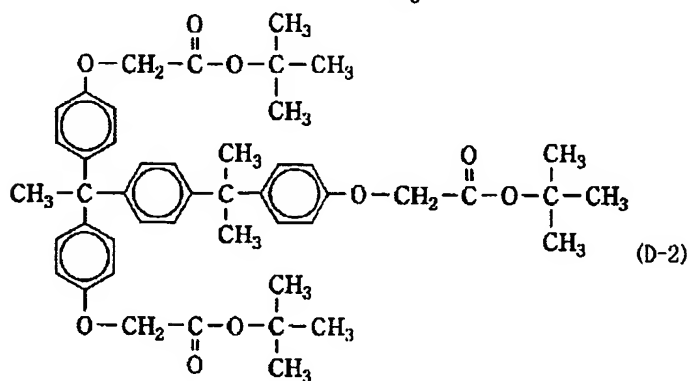
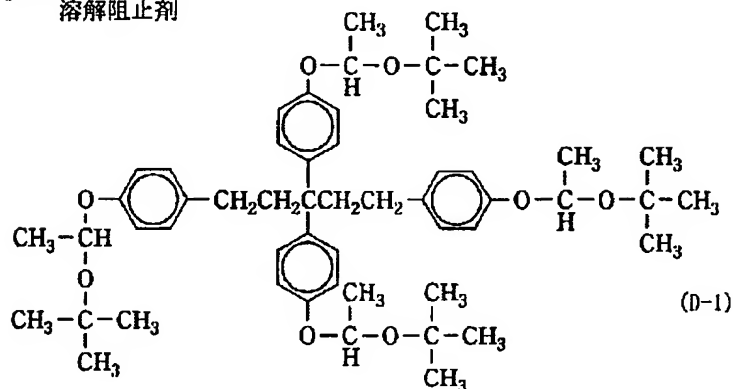
## 酸発生剤



[0181]

[Formula 78]

溶解阻止剤

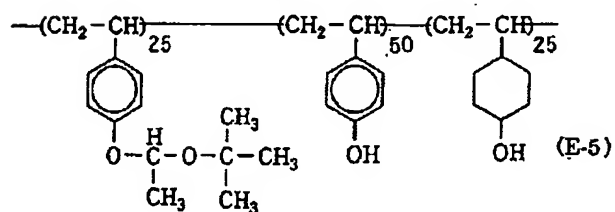
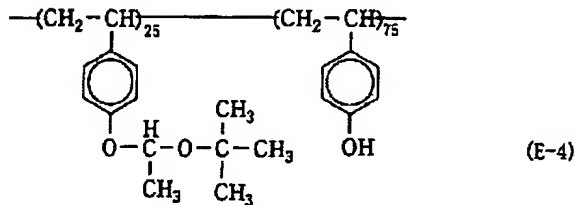
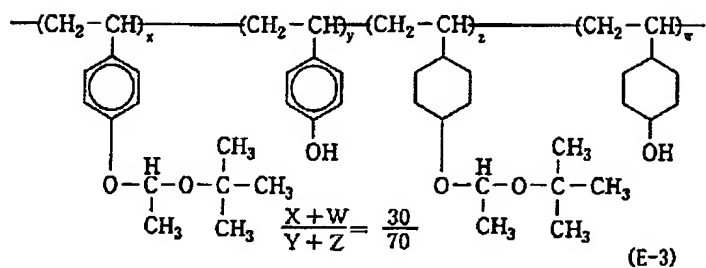
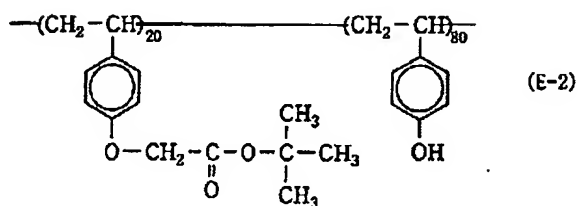
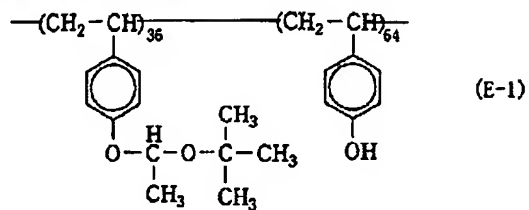




[0182]

[Formula 79]

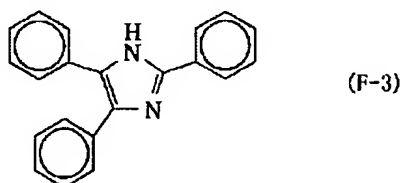
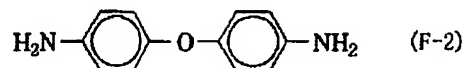
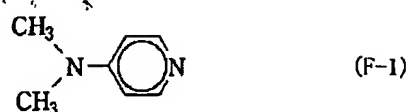
酸分解性基含有樹脂



[0183]

[Formula 80]

塩基性化合物



[0184] Each weight average molecular weight of above-mentioned resin (E-1) - (E-5),: (E-1) It is 28000 (E-2):23000 (E-3):22000 (E-4):30000 (E-5):24000.

[0185] by the same approach as an example 1, each R and G of example 22 examples 3, 10, and 17 and B photosensitivity coloring constituent were sequential-applied, were exposed, were developed, carried out patterning, and the color filter was produced. The color filter with high permeability was obtained.

[0186]

[Effect of the Invention] The positive type photosensitivity coloring constituent of this invention is excellent in high sensitivity at a pattern profile, and suitable for color filters. Moreover, the oxygen cutoff film is unnecessary, the latitude of development is large, development repeatability is good, and turbulence of the edge section can give few sharp images. Furthermore, it is good, and the dispersibility of a coloring agent is excellent also in permeability, and suitable for color filters again.

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[Translation done.]